Gas Journal

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Editorial Notes

Coal

It is hardly necessary to say that on the first of this month the amended Coal Schemes came into operation. Although these Schemes differ in detail, their sole object is to vest the control of the marketing of coal in the hands of the centralized organization of the coal district, and to eliminate competition in the district. It is at present too early to form any definite opinion of the precise effect which will accrue from the elimination of competition from the Coal Industry, but it is certain that there will be a general upgrading of prices throughout the country. The whole object of the amended Schemes is to provide additional money to supplement the miners' wages, and as in the present troubled state of Europe there is no chance of obtaining additional resources from the sale of exported coal, it must necessarily follow that the British consumer will pay more. Undertakings will, no doubt, place their experience at the disposal of the central organizations in order that a true picture of the position throughout the country may be obtained.

It is, however, satisfactory to know that the Government have lost no time in implementing their promise to replace the original Chairmen of the Committees of Investigation by Chairmen with legal qualifications. The office of Chairman of a Committee of Investigation will receive a new importance under the legislation which the Government propose to introduce in the autumn. This legislation will provide that where there is not unanimity among the members of the Committee, the decision of the Chairman shall be final and binding upon the parties. It is, therefore, of interest to know that of the new Chairmen who have already been appointed, six are barristers-at-law and the remainder are solicitors. The Secretary for Mines has now announced that Sir William M. Graham-Harrison, K.C., who was formerly First Parliamentary Counsel, has consented to act as Chairman of the National Committee, and that the following gentlemen have agreed to serve as Chairmen of the District Committees: Mr. W. H. Stoker, K.C. (North Wales); Mr. Norman Harper (Northumberland); Mr. H. Rhodes (Midland (Amalgamated) District); Mr. E. G. M. Carmichael (Shropshire); Mr. W. C. Summer (Cumberland); Mr. S. E. Pocock (Cannock Chase); Prof. R. A. Eastwood (Lancashire and Cheshire); Mr. B. Robertson (North Staffordshire); Mr. H. K. Daniel (Kent); Mr. T. D. Corpe (Bristol, Forest of Dean); and Mr. T. N. Winning (South Staffordshire). This list does not contain any appointment for the Durham area, but it is understood that this will be made shortly. Although the Gas Industry as large consumers of coal cannot be expected to welcome the elimination of competition, it is felt that the reorganization of the Committees of Investigation will, together with a closer contact with the Coal Industry, provide some safeguard against undue exploitation.

The Labour Party Plan

Meanwhile, the Labour Party, through the T.U.C., have issued their own plan for the Coal Industry, and as Sir Walter Citrine remarks in the foreword, the scheme is of more than academic importance, since, together with the former labour scheme relating to cotton and iron and steel, it will furnish the plans from which a Labour Government will work in reconstructing the great basic industries in the country. The scheme indicates that the Labour Party have entirely jettisoned the old conception of socialism which involved the direct transference of basic industries to the State. The scheme advocates the constitution of a British Coal Corporation, appointed by the Minister for Mines, consisting of persons (including representatives of the workers) who in the opinion of the Minister are competent to conduct the affairs of the industry. This body would be somewhat similar to the Central Electricity Board, although it is proposed that the ownership of all coal mines should be vested in the Corporation. Existing owners would be compensated on the basis of maintainable profits. Such questions as wages and prices would be determined by the Corporation, and a Marketing Board for the whole country would work under its close supervision. It is suggested that the Corporation should have power to carry on the work of the coal treatment such as low-temperature carbonization and hydrogenation.

It need hardly be stated that the scheme which the Labour Party have produced would necessarily involve the application of a somewhat similar scheme to other basic industries, including gas, and the Socialist administrator would probably think it necessary to enlarge the powers of the Corporation so as to enable it to control all fuel and power organizations in the country. What would be the effect of such experiments with the vital basic industries of the country cannot be foretold. The views of the official opposition are, however, important, and although there is no immediate prospect of a Socialist administration, it would be shortsighted entirely to ignore the future. We have no doubt that members of the Gas Industry will read and consider the Labour plan with considerable interest.

Gas in Ireland

THE Presidential Address of Mr. P. J. MacEvoy to the Irish Association of Gas Managers was published in last week's "JOURNAL," and in our issue to-day will be found a full report of the proceedings at the successful meeting of the Association held in Dublin on Aug. 11, together with the Paper by Mr. P. J. Sheehan. The other Paper at the meeting, by Mrs. Eileen Murphy, will be given in the "JOURNAL" next week.

Both Mr. MacEvoy and Mrs. Murphy point to the importance of the Irish Gas Industry as a national asset. With a capital of £5,600,000 it finds regular employment for 4,500 people, pays a yearly wages bill of £600,000, and contributes to local and general taxation a matter of £140,000. While it is handicapped by a duty on coal, and other levies which Mr. MacEvoy describes as intolerable, its competitor, electricity, is backed by Governments both North and South and in most cases is free from taxation. In spite of the unsympathetic attitude of Government, however, and in face of this severe competition, the Irish Gas Industry is going ahead. The past year was one of splendid progress; the amount of gas sold exceeded the previous year's figure by 500 million cu.ft., and the number of consumers increased by 15,000. This is sufficient indication of the appreciation by the public of the merits of gas and their satisfaction with gas service. It is also a tribute to the enterprise of the managers of the Gas Undertakings in Ireland, the majority of which undertakings fall into the "small" category.

Mr. MacEvoy concludes his Address on a note of justifiable optimism, and what he has to say should inspire greater confidence and act as a spur to still further effort. So much lies ahead of the Gas Industry in Ireland. As a pointer to the potential field Mrs. Murphy cites the facts that at present the confectionery trade in Ireland, which is expanding rapidly, already uses gas to the value of £15,000 a year; that the engineering and motor trades account for £6,000 worth of gas; and that the printing industry in its main branches uses annually nearly £10,000 worth of gas. Ireland is becoming an industrial country, and this development will be reflected in a more prosperous Gas Industry. We have mentioned that Irish gas undertakings are for the most part small. Size, however, is not necessarily a criterion of efficiency and good service. In this connection Mrs. Murphy quotes as examples of what can be accomplished by small undertakings the results achieved by two small companies—one in Wales with an annual output of 2 million cu.ft., the other in England with an output of less than 5 million cu.ft. a year. The progress of both these companies has been the subject of articles in the "JOURNAL." As a result of enterprise by the Welsh undertaking, £600 worth of fittings was sold in a matter of eight months in a little town of 1,200 inhabitants, and it must be borne in mind that electricity is in competition there. In this case women canvassers were employed who were also able to give advice and service to housewives; and Mrs. Murphy suggests that the Gas Industry should be able to offer a new and interesting career to many more Irishwomen. In regard to the second example, the meadow round the gas-works is hired out for pasturing cows—which gives an idea of the character of the district. Yet, small as the works is, it has a neat showroom, typical of the attitude of the Company; and, needless to say, sales of gas and coke are expanding.

The Paper by Mr. Sheehan is in the main devoted to the use of reinforced concrete in the construction of gas-works plant and buildings. The advantages of reinforced concrete are set out by the Author, who, however, rightly emphasizes that these advantages can only be secured by the exercise of great care and precaution at every stage from the first designs to the completed structure. Failures of concrete in the past have been due principally to insufficient cover of concrete over the steel, bad mixing of the ingredients, insufficient tamping,, careless placing of the steel reinforcement, and excessive use of water in the concrete. The advice which, as a result of experience, Mr. Sheehan has to offer on reinforced concrete cannot fail to be useful. The other section of the Paper deals with recent developments in the preparation of coke, and it is gratifying to realize that more and more attention is being given to the manufacture and marketing of what until comparatively recently was regarded as a product almost unworthy of notice.

Good Service

THE City of Dublin and its Lord Mayor would appear to be inseparable, and it was a real pleasure to renew acquaintance with both of them, on the occasion of the Irish Association meeting. Dublin itself gives a visitor the impression of increasing well-being, and this impression is strengthened by the optimistic outlook of our old friend Alderman Alfred Byrne, T.D., who, during the meeting, was warmly congratulated upon his election for a further period as Civic Head of the City to which his life's work is devoted, and in regard to the affairs of which he is perfectly ready to admit the possibility of continued improvement. The soundness of the idea that things are "not too bad" as far as the City is concerned was also borne out by the practical test that we were able to apply,—a test to the reliability of which we ourselves attach the greatest faith. A visit to the chief showrooms of the Alliance and Dublin Consumers' Gas Company revealed entire recognition of modern needs in the home and in industry, and a satisfactory condition of business. Here the City have two good servants—a popular Lord Mayor, whose mind is ever on slum clearance and other means of bettering the lot of the citizens, and an enterprising Gas Company which does so much to assist in providing employment, both directly and indirectly, and in making home life all that it should be.

But there is another example of good service to which we would also like to make reference. An example which bears significance far beyond the strict limits of the Irish Association, which this year celebrates its Jubilee, and which over the fifty years of its existence has had but two Hon. Secretaries. The first of these was Mr. J. P. Whimster, of Armagh, who was a prominent member of the Industry during his time, and who will be remembered with affection by many of our older readers. He held office for the first 23 years of the Association's existence, and was followed by Mr. George Airth, of Dundalk, who is now retiring from the position of Hon. Secretary and Treasurer, which he has filled for the past 27 years. We do not at the moment recall another Association as having had no more than two Secretaries over a period of half-a-century—though, of course, another record is held by our respected friend Mr. Octavius Thomas, of Porth. The Wales and Monmouthshire Association of Gas Engineers and Managers was formed in March, 1905, and ever since then Mr. Thomas has been Hon. Secretary, even while acting as President.

Here are examples of long and steadfast service to their fellow men which all must admire. Mr. Airth, when

thanking his friends last week for a tangible mark of their appreciation and affection, said that " no one man can make an association prosperous." We are not so sure that he is altogether correct in this, but let us take our stand on absolutely non-controversial ground. The Irish Association must be the better for having had such a man as Mr. Airth to watch over its destinies for so many years; and the Gas Industry must be the better for the existence of such an Association to further its interests. Put no higher than this, Mr. Airth's services to his professional brethren—always ungrudgingly offered, and modestly, with no desire whatever to appear in the limelight—have been notable. We think they merit description in more glowing terms.

We would express the hope that Mr. L. W. Dalby, of Kilkenny, who succeeds to the Secretaryship, has before him a long period of good work for the Association.

Low-Temperature Retorts

The low-temperature carbonization of coal owed its inception to this country, but it has been largely experimented with in America and Germany. On April 22 last we recalled the comments of Mr. H. H. Lowry, regarding the progress of low-temperature carbonization in America, in which he pointed to the loss to the American public of some 50 million dollars—through the failure of low-temperature carbonization processes in that country between the years 1920 and 1930—as evidence that the designers have no adequate scientific data upon the behaviour of coal when carbonized at temperatures of 500° to 600° C. American experience puts the blame for the many failures in this branch of carbonization upon the lack of scientific data. We suggested at that time, and we repeat now, that it was not altogether scientific data that were lacking, but that the designer and the scientific data were all too often not in the same place at the same time.

Dr. H. Müller in reviewing the progress and past history of low-temperature carbonization in Germany (in a Paper submitted to the Chemical Engineering Congress) states that in nearly all cases failure has been due to a wrong construction of the apparatus, accompanied by a faulty method of heating and a lack of knowledge of the properties of coal. There seems to be general agreement that most of the earlier inventors of low-temperature carbonization systems did not possess that knowledge of the art of carbonization nor of the properties of coal when in the plastic stage that is considered so necessary among technical men who operate and design systems of carbonizing coal at high temperatures. In the discussion on Dr. Müller's Paper, and others, it was suggested by Mr. W. H. Cadman that there was yet another reason for the failure of low-temperature systems, which was the endeavour to launch into commercial operation processes which had not been developed step by step on sound chemical engineering lines. Methods which permitted the distinctly optimistic translation of retorts direct from the small-scale and even from the minute-scale on to the manufacturing scale were contrasted with the care with which such processes as the Bergius hydrogenation and the Fischer-Tropsch processes had been built up step by step by careful laboratory, larger-scale, semi-scale, and experimental large-scale work into commercial units. At every stage careful research had elucidated each scientific and technical point so that when the large-scale plant was approached a body of wonderfully detailed information was available. Mr. Campbell Finlayson's Paper contained the pertinent phrase: " A successfully designed plant does not happen by accident, rarely does it happen by inspiration, almost always by experience." It cannot be doubted that those low-temperature systems (and the same refers to high-temperature systems) that have achieved, or will achieve, enduring success can only have been built up on the lines enumerated here; there is no other royal road to success in new ventures.

The Commercial Aspect

We wonder, moreover, whether some who engage in these new ventures fully realize that technical perfection is not the only, or even the fundamental, condition of success. It is *a* fundamental, of course; but the commercial aspect is also fundamental. We would commend to those about to undertake new ventures a Paper by Mr. Crosby Field on " Considerations influencing the Formulation of Chemical Engineering Projects," in which among many other pertinent remarks he indicates the fact well known to the Gas Industry that consideration of either the raw materials available or the by-products obtainable is rarely a determining factor in the decision to exploit a new consumer's product (*i.e.*, a product sold to the public), because the high cost of distribution is generally several times the raw material cost. He remarks somewhat caustically that the financing of a new product is comparatively easy, because few chemists can properly estimate the tremendous cost of marketing. When this cost is considered properly, however, it can be stated, says the Author, that excepting in the rarest of cases no new consumer product is worth financing at all unless the complete distribution plan has been worked out to include by its own agreement one well-established marketing organization. The return on capital is very slow for the first few years; and that in spite of the fact that the proportion of capital used for plant investment is small in proportion to that required for sales work. We do not recollect many estimated balance-sheets issued in connection with new coal processing systems that have taken fully into account this most important aspect of the cost of marketing. We should be disposed to add this as yet another reason why apparently well-favoured processes fail.

Technical Requirements

To return to Dr. Müller's Paper, however, it is interesting to observe that he postulates four technical requirements for a successful low-temperature carbonization process. These are: (1) Carbonization at rest, (2) carbonization in thin layers, (3) use of iron as a material of construction, and (4) efficient systems of heat transfer to give maximum heat economy at the low working temperatures. No one will quarrel with the second and fourth of these requirements, but there are in successful operation in this country systems which controvert the first and third. At Greenwich, the Fuel Research Board having tried intermittent iron retorts has now in use a continuously operated brick retort that is giving remarkably good results. There was no doubt in the minds of many a few years ago that brick retorts were to be preferred to iron retorts, but the growth of experience has led to designs that seem to be standing up to their duty remarkably well. We should like to know how far this is due to the work of the British Cast Iron Research Association. Considerable advances have been made within recent years in the manufacture of cast irons for all purposes. Modern cast irons offer a variety

of structures—ferritic, pearlitic, austenitic, and cementitic—having a wide range of mechanical properties and responses to heat and corrosion. The Director of the Association has stated that material can be chosen to meet any given set of conditions provided that expert advice is called in and is given the fullest available information.

One of the most difficult characteristics of cast iron from the point of view of the carbonizer was the tendency of grey cast irons, containing graphite, to " grow "—to increase in volume in addition to external scaling. This tendency increases with temperature and with the number of fluctuations in temperature to which the part is subjected. It is now known to be an internal phenomenon, due first to decarburization and secondly to oxidation arising from the penetration of oxidizing gases down the graphite cavities, the change to oxide resulting in increase of volume. The British Cast Iron Research Association has shown that high silicon irons containing 5 to 6% of silicon, with low carbon and fine graphite, have marked resistance to scaling and growth, owing their properties to the fine graphite structure which prevents the penetration of oxidizing gases, and to the high silicon content. It would seem that growth might be prevented by heating the retort with gases that were always slightly reducing and by adopting some system, such as a continuously operated retort, which would prevent access of air to the inside during discharging and would also prevent fluctuations of temperature.

Fixed Trusts

The report of the Departmental Committee appointed to enquire into Fixed Trusts has now been issued to the public. The Chairman, Sir Alan G. Anderson, and the members of the Committee are to be congratulated on a lucid and interesting report, which will be read with interest by many members of the Gas Industry, particularly those connected with the larger companies whose shares have been included in the block of securities purchased by Unit Trusts. The report summarizes the various forms of Unit Trust, which include the original Fixed Trusts (*i.e.*, in which the block of securities is specified by the Trust Deed and cannot be varied) and Flexible Trusts. Flexible Trusts allow in greater or less degree for the variation of the securities held by the trustee, either within certain defined limits or absolutely at the discretion of the trustee. Striking evidence is given of the growth of the Unit Trust by the fact that since the formation of the first Trust in 1931 no fewer than 67 Unit Trusts now exist, and that some £50,000,000 has been invested in these organizations.

It is well known that the object of these trusts is to purchase blocks of securities of various large industrial organizations. The securities so purchased are vested in a trustee, whose powers are defined in the Trust Deed. As against these securities, units or sub-units are issued to the public by the management, the number of units or sub-units being so adjusted that each will cost approximately £1. The price at which the unit is offered to the public will depend upon the Stock Exchange price of the Trust securities on the day of the purchase of the unit, but the price so estimated is loaded so as to include stamp duty, brokers' commission, and a fixed percentage charge to defray the expenses of management. It is pointed out that these additional charges may amount to as much as 12½% of the purchase price.

It is admitted that the Unit Trust has met a real need, particularly in days when, owing to steeply-graded taxation, industry is becoming increasingly dependent upon the small investor. Such an investor appreciates the opportunity of spreading his small savings over a considerable number of different companies. Further, a rise in prosperity which has been experienced in industry during the last few years has favoured the Unit Trust movement. Extensive advertising has been another factor in the rapid growth of the movement, and something between a quarter and half a million pounds is stated to have been spent for this purpose. In advertising the movement is not subject to the restrictions imposed by the rules of the Stock Exchange or to the regulations of the Companies Acts.

The report contains certain warnings with regard to the use of such phrases in advertising as " capital and income assured " (particularly when it appears in close conjunction with the name of a well-known Bank), and such terms as " Fixed Trust " and " National." It is emphasized that there is no safeguard against the fluctuations in the capital value of ordinary shares, and the rates of dividend payable thereon, which must be reflected in the capital value and income per unit of the Unit Trust.

The Question of Control

The Committee expressed the opinion that the Unit Trust system is one which should be controlled, but not prohibited, and rejected the suggestion that an authority should be set up whose duty it would be to grant licences without which Unit Trusts could not be formed or enlarged. The report points out that it would be impossible to safeguard completely against the possibility that managers of United Trusts may make illegitimate profits at the expense of those investing in them. In this connection, the report refers to the dual rôle of Management Companies, which, although in part confidential agents of the unit holders, are in addition principals who stand to gain or lose by transactions with those holders, particularly in connection with the buying of the underlying securities.

The report then considers in detail certain suggestions for the regulation of Unit Trusts. Of these suggestions, the more important are the following:

(1) That every Unit Trust should be registered, and that the managers of such Trusts should file with the Registrar certain documents and information, including a copy of the Deed constituting the Trust;

(2) that each Management Company should deposit with the Paymaster-General a substantial sum (£20,000 is suggested) in respect of each Unit Trust which they manage;

(3) that Trustees should be of a specified status—*e.g.*, a Corporation constituted under the laws of the United Kingdom, having a place of business in the United Kingdom, and empowered by its Constitution to undertake trust business, having a capital for the time being issued of not less than £500,000, of which not less than 200,000 shares have been paid up in cash;

(4) that full Trust accounts and accounts of the Management Company shall be filed;

(5) that where any indemnity, additional to that accorded by law to Trustees, is contained in Trust Deeds in favour of the Trustees or Managers, such indemnities should be fully disclosed;

(6) that every offer for sale should be accompanied by full particulars of the Constitution and operation

of the Trust (a summary of such information is set out in an appendix to the report);

(7) that the appointment of an auditor is to be subject to the approval of a trustee or the majority of units or sub-units to have power to remove the auditor;

(8) that income-tax distribution grants should show clearly how the income-tax distribution is calculated;

(9) that the hawking of units or sub-units is to be prohibited.

It is impossible for us to do more than call attention to a few of the outstanding features of the report, but we feel certain that the Gas Industry as a whole will support the views contained in the report, and welcome the excellent recommendations contained with regard to the regulation of Unit Trusts.

Wanted, A Draughtsman

Optimism—or would some other expression better fit the situation?—prevails at Widnes, where the Gas Department has enjoyed a most successful year. This success was recently brought to the notice of its consumers and the general public by a striking full-page newspaper advertisement drawing attention to the fact that the quantity of gas supplied during the year was 10% more than the amount sent out during the twelve months ended March 31, 1935. This excellent result is a pointer to still better things to come for the Department. Will these better things be shared by the staff?

In our advertisement columns last week the Department invited applications for the post of draughtsman—and what a draughtsman! Candidates had to be "well versed in the requirements of gas and water undertakings." Exactly what that implies, it is hard to say, but it suggests considerable breadth of outlook and not a little experience. More concrete, however, was the statement that preferential consideration will be given to applications from candidates who are Associate Members of The Institution of Gas Engineers, or who hold equal qualifications. Those in the Gas Industry are well aware of the time and effort, to say nothing of expense, which the attainment of qualifications such as these entails—years and years of hard work, for what? In the present instance a commencing salary of £200 per annum, rising by princely annual increments (subject to satisfactory service) to finality at £260 per annum after four years in the Department's employ. Bright prospects, these, for capable and ambitious youth! We hope that the Widnes Gas and Water Department gets what it is prepared to pay for—and no more. It will certainly not succeed in obtaining the services of anyone "well versed in the requirements of gas and water undertakings."

Personal

The Summer Number of the Birmingham Gas Department's Magazine mentions a number of staff changes among members of that Undertaking who are well known in Midland Junior Gas Association circles. Mr. R. G. Marsh has relinquished his position as Fittings Superintendent in order to take up the appointment of Distributing Engineer. Mr. W. L. S. Spinks succeeds him as Fittings Superintendent, while Mr. J. T. Rees becomes Assistant Fittings Superintendent. The first two named are Past-Presidents of the Midland Juniors. Members of the Birmingham Gas Department Fittings and Maintenance staff honoured Mr. Marsh with a smoking concert and presentation on his leaving to take up his new duties.

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Mr. J. Alsop, Hon. Secretary of the Manchester and District Junior Gas Association, has recently been elected a Foundation Fellow of the Institute of Private Secretaries, which was incorporated with the special object of protecting and furthering the interests of Secretaries of Private Companies, Associations, Members of Parliament, and members of the Medical and other Professions. The Institute has a very distinguished list of Patrons.

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Mr. Mark Newsome, of Cleethorpes, has been appointed Technical Assistant to the Blackpool Corporation Gas Department.

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It was reported to the Caernarvon Town Council that the Engineer, Manager, and Secretary, Mr. W. M. Ruxton, would retire on superannuation at the end of September next.

Gas Journal Shewring Fund

Donations are invited to the Fund, full particulars of which were given in the "JOURNAL" for July 22. The Management of the Fund is in the hands of Messrs. F. G. Shaw (Buxton), W. W. Townsend (Colchester), and J. Bridge (Elland). All expenses having been guaranteed, the whole of the sums received will be applied, without any deduction whatsoever, to the benefit of the widow and children of Harold Shewring, by whose tragic death earlier this year they were left in distressed circumstances.

Cheques should be made payable to the "GAS JOURNAL," and crossed "Shewring Fund Account." All donations will be gratefully acknowledged by the Editor, who is Treasurer to the Fund.

We are pleased to be able to state that the total of the Fund is now well over £200, which has been subscribed in individual donations from 5s. to 25 guineas.

Obituary

The death took place on Friday, Aug. 14, of Mr. Robert Grierson, for many years a Director of Hawick Gas Company.

Forthcoming Engagements

Aug.

28.—I.G.E.—Gasholder Committee at 2.30 p.m.

Sept.

8.—N.G.C.—Meeting of the Central Executive Board.
10.—North British Association.—Annual Meeting at Kirkintilloch.
14.—I.G.E.—Research Executive Committee at 2.30 p.m. [Transferred from Sept. 1.]
24.—Wales and Monmouthshire Association.—General Meeting at Porthcawl.
25.—North of England G.M.A.—Autumn Meeting at Middlesbrough.

Oct.

3-6.—B.C.G.A.—Jubilee Conference at Bath.
22.—Coke Oven Managers' Association.—Annual Dinner at the Hotel Victoria, Northumberland Avenue, W.C. 2.

Nov.

3 and 4.—I.G.E.—Autumn Research Meeting.
26.—I.G.E.—Advisory Committee on Research at 2.30 p.m.

N.B.—*There will be no Meetings of the Central Executive Board of the National Gas Council or of the Central Committee of the Federation of Gas Employers during August.*

News in Brief

Dividends of 4⅛% on the Original Shares and **3½%** on the New Shares of the Altrincham Gas Company were paid on Aug. 13 for the half-year ended June 30, 1936.

The Coke Oven Managers' Association will hold their Annual Dinner at the Hotel Victoria, Northumberland Avenue, W.C. 2, on Thursday, Oct. 22, 1936, when the Rt. Hon. Lord Greenwood, P.C., will be the principal guest of the evening.

Dividend Warrants for the half-year ended June 30, 1936, payable on Aug. 15, were posted on Aug. 14 by the South Shields Gas Company. The dividends were declared at the following rates: 4¼% on the Consolidated Stock and 2⅞% on the Ordinary Stock, both less income-tax.

The Institute of Private Secretaries, of which Mr. J. Alsop, Hon. Secretary of the Manchester and District Junior Gas Association, has been elected a Foundation Fellow, has a distinguished list of Patrons. Particulars of membership may be obtained upon application to the Secretary, 8, New Court, Lincoln's Inn, London, W.C. 2.

At the Famous Dublin Horse Show at Ballsbridge, which attracted a record attendance of 122,442, the Alliance and Dublin Consumers' Gas Company had a prominent stand in the Industrial Fair Section on which gas refrigeration was featured. Demonstrators from the Company's Theatre in d'Olier Street were in constant attendance for the five days' run of the exhibition.

The Five-Year Development Programme of the Middlesbrough Corporation for its Gas Undertaking is estimated to cost £82,000, and will include £40,000 for gas mains; £5,000 for meters; £17,500 for cookers; £2,000 for exhausters; £1,000 for station meters; £4,500 for workshops at the gas-works; £5,000 for offices; and £7,000 for showrooms.

The Net Profit of the Metropolitan Gas Company, of Melbourne, we are informed by Messrs. John Terry's, 296, Regent Street, W. 1, is £197,191 for the year ended June 30, 1936. A final dividend has been declared at the rate of 6s. 6d. per share. An amount of £25,000 has been transferred to the reserve account and £73,815 has been carried forward.

Welding Instead of Riveting is to be employed in the construction of the Stretford and District Gas Board's new 2 million cu.ft. gasholder at Sale to eliminate noise. The Gas Board's Order, empowering them to build the holder on the old Sale sewage works site in Dane Road has been confirmed by the Board of Trade and Parliament and work is to begin immediately.

An Order Has Been Received by the South Suburban Gas Company from the Urban District Council to install lighting columns in the streets of St. Mary Cray, similar to those recently erected in Orpington. The latter give a very much improved service, more in keeping with the considerable growth of the township in recent years. Gas street lighting, operated by clock control, now extends a considerable distance out to a number of Kentish villages in this neighbourhood.

The New Gasholder in Cannon Street, Middlesbrough, has been filled with gas. Alderman S. A. Sadler, Chairman of the Gas and Electricity Committee, accompanied by Mr. C. F. Blincoe (Engineer and Manager), Mr. J. Pallister (Assistant Engineer and Manager), and Mr. D. Wood (Clerk of Works), turned on the valves which admitted gas to the holder. With a capacity of 4 million cu.ft. and standing 200 ft. high, this is one of the largest gasholders in the North of England. An official inauguration ceremony will take place shortly when the holder is put into use.

Of the 930 Miles of Streets, courts, and passages which are lighted by the Liverpool Corporation, 615 miles are gas lighted and the remainder electrically lighted. The number of gas lamps used for street lighting purposes is 16,279 and electric lamps about 15,000. The usage of gas mantles during the year was 83,780, compared with 89,234 the preceding year, or an average of 3·436 and 3·556 per burner per annum respectively. The consumption of electric lamps was about 30% heavier than the preceding year, the actual figures being 59,249 and 42,325 respectively, the average usage being 3·18 per lampholder in 1935-36 as against 2·54 in 1934-35.

Applications are Invited for the position of Assistant Gas Engineer and Manager to the Dewsbury Gas Department. The salary is £300 per annum, rising by annual increments of £15 to £360 per annum.

The Allotments and Gardens of employees of the Newport (Mon.) Gas Company were recently inspected, and Mr. C. O. Lloyd, a Director, presided at the annual prize distribution in connection therewith on Friday, Aug. 14. In addition to the prizes awarded by the Directors of the Company, Alderman C. F. Williams organized a competition for garden peas, awarding seeds, fertilizer, and prizes. Mr. R. Wilson Bartlett also continued his award of prizes for the four best flower gardens. Mr. G. Chambers, of Usk, reporting upon his inspection of the gardens and allotments, stated that the general standard of cultivation might be classed as excellent. Mrs. Kathleen Rust judged the flower gardens, and Mr. Henry Basham judged the produce classes. Mr. J. H. Canning, O.B.E., J.P., Engineer and Manager, read the judges' report. On the motion of Mr. G. Willey, seconded by Mr. W. J. Connor, the Directors of the Company, the donors of special prizes and seeds, and the judges were thanked. Mr. C. O. Lloyd offered a prize for competition in a class to be selected by the men themselves.

Amalgamation and Grouping

Wellington and Irthlingborough.

The Special Order authorizing the acquisition of the Irthlingborough Gas and Coke Company by the Wellingborough Gas Light Company has been approved, and mains linking up the two undertakings are to be laid without delay. The share capital of the Wellingborough Company is to be increased by the addition thereto of 11,911 ordinary shares of £1 or such less number as shall be required as consideration for the transfer of the Irthlingborough undertaking for issue to the holders of the share capital of that Company.

New Scale of Charges at Brighouse

For Domestic Prepayment Consumers

As from Oct. 1, 1936, the following new scale of charges for domestic consumers using prepayment meters will be introduced by the Brighouse Corporation Gas Department:

WITHIN THE BOROUGH.

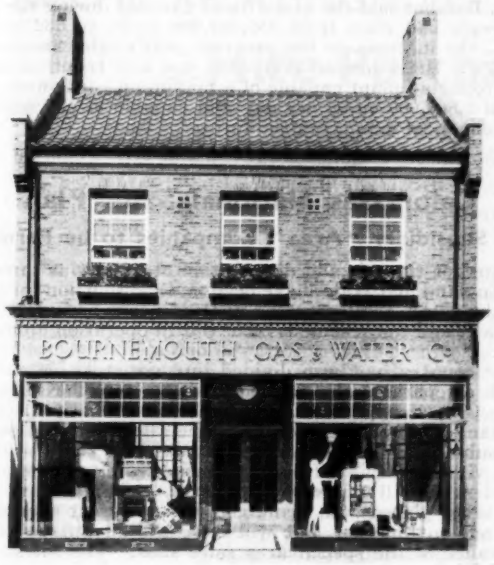
Per Quarter.	Existing Prices.		New Prices.	
	Per Therm.	Per 1,000 Cu.Ft.	Per Therm.	Per 1,000 Cu.Ft.
	d.	s. d.	d.	s. d.
The first 10 therms (2,000 cu.ft.) . .	10·0	4 2	10·0	4 2
The next 5 therms (1,000 cu.ft.) . .	8·4	3 6	8·4	3 6
All in excess of 15 therms (3,000 cu.ft.)	4·4	1 10	3·24	1 4½

OUTSIDE THE BOROUGH.

Per Quarter.	Existing Prices.		New Prices.	
	Per Therm.	Per 1,000 Cu.Ft.	Per Therm.	Per 1,000 Cu.Ft.
	d.	s. d.	d.	s. d.
The first 10 therms (2,000 cu.ft.) . .	10·0	4 2	10·0	4 2
The next 5 therms (1,000 cu.ft.) . .	9·0	3 9	9·0	3 9
All in excess of 15 therms (3,000 cu.ft.)	5·0	2 1	3·6	1 6

For the quarterly (ordinary meter) consumers, after Oct. 1, the rates charged for simple hire of cookers will be similar to those now charged to slot meter consumers. These concessions mean a reduction in individual cases of from four to ten shillings per annum.

During the months of August and September the Gas Department are offering special reductions for gas fires. This concession involves 10% discount on all cash orders, one quarter free rent on simple hire orders, or the last quarterly instalment cancelled on all three-year hire-purchase orders.



Exterior View.

Bournemouth Company

Opens New Showrooms

in Wimborne District

The Undertaking of the Wimborne Minster Gas Company was taken over by the Bournemouth Gas and Water Company as from July, 1935, and new showrooms have been erected in High Street on the site of one of the oldest properties in the street. The new building is of Georgian design and was designed to be as much in keeping with the surrounding old-world properties as possible.

The building is constructed of 2½ in. multi-coloured bricks, the roof being covered with dull brown pantiles. It contains a spacious showroom, approximately 50 ft. long by 24 ft. wide, together with office and store on the ground floor, with a demonstration and lecture hall on the first floor. Full use of the frontage available for window display purposes has been made by the plate-glass being fitted within a few inches of floor level. The windows are without screens at the back, so that the public have an unobstructed view of the whole of the interior of the showroom.

The walls are panelled with Australian silky oak with black ebony cappings, rails, and skirtings. The panelling is blocked away from the walls, all gas piping being concealed behind it with gas fires let in flush with the panelling. The floor is laid with Terrazzo paving in two colours with a black border, and the decoration of the frieze and ceiling is carried out in plastic paint.

The staircase leading up to the demonstration hall is carried out in Austrian oak, and the floor and finishings of this room are of the same material.

This room will comfortably seat about eighty people, and a well fitted stage is arranged so that the cookery demonstrations can be easily seen by everybody present. On either side of the stage are rooms to serve as stores, scullery, &c. The walls and ceiling of this room are decorated in two styles of plastic paint and finished in bright cream, giving a very attractive appearance.

A rather pleasing feature has been made of a small yard at the back of the building. This has been converted into a garden with a Purbeck stone rockery sloping up to a lily pond and fountain. The walls surrounding the garden are covered with square trellis work and climbing roses which are visible from the roadway when looking through the showrooms.

Water Heating.—Displays of the different types of gas water heaters with hot water draw-off taps are fitted on the side walls of the showrooms immediately behind the windows. These attract attention from the outside and are also in full view of consumers entering the showrooms.

The Spacious Interior.

Attractive Water Heater Display.

Included in this display is a " Rex " gas-operated central heating boiler, this apparatus being used for heating the demonstration hall on the first floor and the hot water pipes in the showroom.

Heating.—The heating of the premises is effected by panel gas fires fixed on the side walls, ventilating into " Nautilus " flues built into the main walls of the building. " Newbridge " gas fire lighters are fitted to these fires at convenient heights to avoid stooping.

Lighting.—The main lighting of both the showroom and demonstration hall is by Sugg's ventilating lamps, the products of combustion being conveyed between the floors and ceilings to the flueways at the side of the building. All the lights are fitted with Sugg's distance controls.

The General Contractors for the building were Messrs. Jenkins & Sons, Ltd., of 43, Holdenhurst Road, Bournemouth, and the shop front was supplied by Messrs. D. Drake & Son, Orchard Street, Bournemouth. The Architects were Messrs. Reynolds & Tomlins.

Torquay Company's Enterprise at Oddicombe Beach

Service Pipe at One in Three Gradient

An example of enterprise and business hustle was recently evidenced by the Torquay and Paignton Gas Company at Oddicombe Beach.

The Company were asked to provide a supply of gas at the beach café and to install apparatus capable of delivering 1,000 pints of boiling water per hour, in addition to instantaneous water heaters and sundry cooking appliances.

Operations were begun the same night, the Company's workmen beginning the pipe laying, which was carried on beside the cliff railway track at a gradient of one in three. Work had of necessity to be done at night, but in spite of this the whole installation was completed within six days, and not only completed but in operation—a triumph for the Industry's service on which the Torquay Company are to be congratulated.

"Now," observes a local newspaper, commenting on the installation, "hundreds of holiday-makers obtain their tea with a little more facility, while the Torquay and Paignton Gas Company rest happy in the knowledge of another job well done."

Newcastle's Refrigerator Campaign

This striking display lorry which is at present touring the area of the Newcastle-upon-Tyne and Gateshead Gas Company is a feature of the undertaking's gas refrigerator campaign which is now running.

Rochdale Loan Application

Renewal of Carbonizing Plant

Mr. G. S. Wells, A.M.Inst.C.E., an Inspector of the Ministry of Health, held an enquiry at Rochdale on Thursday, Aug. 13, into an application by the Rochdale Town Council to borrow £40,000 for the renewal and modernization of the retort settings and carbonization plant at the Dane Street Gas-Works.

It was explained that some time ago the Gas Committee of the Corporation considered a detailed report from the Gas Engineer on the condition of the existing carbonization plant at the Gas-Works. The Engineer strongly recommended that immediate steps should be taken for the renewal and modernization of the plant. The plant which would be replaced under the new scheme was purchased out of reserve and revenue. The Engineer estimated that £3,000 a year would be saved in running costs and that there would be an increased income of £2,000 from residuals.

Mr. Cecil H. Bamber, Engineer and Manager of the Rochdale Gas Department, said that whereas at present gas was being manufactured at Dane Street by three separate gas-making plants, and with inadequate means of control, it would, under the new scheme, be manufactured entirely from one plant. It would be possible to measure all raw materials and products, and a much wider choice of fuel would be available. The retort installation would be in one large flexible unit.

It was not possible to give accurately the annual saving to be expected, but a very conservative estimate was as follows: Saving in running costs, &c., £3,000; increased income from residuals, £2,000; thus producing an increase in profits of £5,000 on the basis of wages and raw materials costs at present prevailing.

Mr. Bamber said the quantity of gas sold during the past ten years had risen from 559,362,000 cu.ft. to 632,512,000 cu.ft., the increase on the previous year's sales amounting to 3·6%. He estimated that what was now required was a gas-producing plant capable of a maximum continuous output of 2,800,000 cu.ft. per day and capable of extension in an economical manner in the future.

Calor Gas National Sales Plan

Six Subsidiary "Area" Companies to be Formed

Plans for the sale and distribution of Calor Gas throughout England and Wales have been under discussion for some months past. We learn that final decisions have just been reached, and the scheme is to be put in operation almost at once.

The country has been divided into six areas, in each of which a separate sales company will control the selling of Calor Gas, of appliances, fittings, and installations. Each company will operate upon the same sales plan and policy. The sub-division of each area into numerous small sections, each with its sales staff, is an essential feature of the plans.

Orders for all types of appliances, we understand, are now being placed with manufacturers. Present agents will continue to function, but will have the advantage of the assistance of the special area sales staff. The sales areas are the following:

No. 1 South-Eastern.—Kent, Surrey, Sussex, Hampshire, Berkshire, Middlesex.

No. 2 Eastern.—Oxfordshire, Buckinghamshire, Hertfordshire, Bedfordshire, Essex, Suffolk, Norfolk, Cambridgeshire, Huntingdonshire, Northamptonshire.

No. 3 Midland.—Warwickshire, Leicestershire, Rutland, Lincolnshire, Nottinghamshire, Derbyshire, Staffordshire.

No. 4 Western.—Wales, Shropshire, Herefordshire, Worcestershire, Cheshire.

No. 5 South-Western.—Gloucestershire, Wiltshire, Somerset, Devonshire, Cornwall, Dorset.

No. 6 Northern.—Yorkshire, Lancashire, Westmorland, Durham, Cumberland, Northumberland.

Each major area will be sub-divided into smaller areas, each of 20 miles square, giving a sales district of 400 sq. miles in which one mobile demonstration showroom will be used for daily demonstrations at fairs, shows, in market places, &c. The showrooms will be fitted with a complete range of appliances, and two salesmen will be in constant attendance.

Two further salesmen will operate in each showroom area and will be supplied with a 5-cwt. Ford van, fitted with a demonstration set of appliances. An experienced inspector, provided with a similar van, will check up installations and deal with technical points and queries, and he will cover two mobile showroom areas.

The question of installation is one that has presented many difficulties, but it has now been decided to appoint registered sanitary engineers and plumbers as official Calor Gas fitters and stockists. They will all receive special training from the Calor Gas Headquarters Technical Staff. Each one will be given an area of 25 sq. miles and he will execute all orders obtained in that area by salesmen and others. Actually there will be 16 official fitters and stockists in each demonstration van area.

The first two mobile showrooms are already at work in the Western district. Delivery of two or three mobile showrooms is promised weekly, and as they come into service new areas will be opened up. We are informed that the Western area in the course of the next few weeks will absorb 12 mobile showrooms, 20 salesmen, 6 inspectors, and 150 official fitters. The total for England and Wales will be 76 showrooms, 130 salesmen, 36 inspectors, and over 1,000 fitters, in addition to those gas companies and other agents already operating.

Area companies will be known as the South-Eastern, Eastern, Midland, &c., "Calor Gas Company." The Western Company will be registered in the course of a few days and its headquarters will be at 10, St. Nicholas Street, Worcester.

Commenting on the plans, Mr. E. Wilson, Distribution Manager of the Calor Gas Company, said that the co-operation of gas undertakings would be welcomed and all possible assistance would be rendered in selling and distribution.

The Board of the area companies will consist chiefly of gas executives. Scotland, Northern Ireland, and the Irish Free State will be developed by the present official agents.

Two additional areas will be put into operation during this month and all the six areas will be in operation before the end of September.

PROBLEMS RELATING TO
Hire-Purchase Agreements

Hire-purchase agreements give rise to certain legal considerations which should be clearly appreciated, and the object of this article is to call attention to a few of the more common problems which frequently crop up from day to day.

One of the most significant features of post-war salesmanship is the rapid extension of the hire-purchase system. The system is a satisfactory method of bridging the gap between supply and demand—the knowledge that the best that modern technical and scientific research can produce can be acquired without an inroad upon hard-won savings has been a vital element in our commercial evolution. To-day there are few gas undertakings which do not utilize to the full the facilities which the hire-purchase system confer, although it is realized that there will always be a demand on the part of certain classes of consumers for the traditional simple-hire form of agreement.

With regard to the more modern appliances, such as enamel cookers, water heaters, and refrigerators, it is probable that the popularity of the hire-purchase system will increase and eventually become the ordinary method of supplying such appliances to the consumer.

Although it is generally realized that there is no necessity to stamp an agreement which relates solely to the sale of gas, the question frequently arises as to whether a hire-purchase agreement with regard to appliances is similarly exempt. As to this, there once existed some doubt, but the question was solved by the Finance Act, 1907, which provided in effect that such agreements were to bear a 6d. stamp.

This provision, however, does not imply that any hire-purchase agreement that is not stamped is void or illegal, but merely has the effect of making it impossible to produce the agreement as evidence in a Court of Law in the event of litigation, unless a penalty for non-stamping is previously paid.

Realizing that litigation between gas undertakers and their consumers is a most rare occurrence, many undertakings quite reasonably do not consider it necessary to stamp these agreements. Naturally, it would not be possible to stamp any agreement unless that agreement was in writing, and therefore our next question is whether writing is an essential requirement to such a contract.

The strictly legal answer to this question is that writing is only necessary if the instalments are spread over a period of more than one year. From the practical point of view, however, it is most desirable that all such agreements should be in writing. In the first place, unless there was an express provision to the contrary, the hirer would only be under an obligation to take reasonable care of the apparatus, and would not be liable for any loss or injury which might happen to the apparatus, unless caused by his negligence. Further, the consumer would not be liable if the apparatus was destroyed by fire (Viviers *v.* Juta & Co., 1902, 19 S.C., 222). Naturally, it is most advisable that there should be a written agreement which would contain provisions under which the hirer's obligations would be specifically defined.

Right to Distrain.

Another question which frequently occurs relates to the right of a landlord to distrain upon appliances subject to hire-purchase agreements in respect of arrears of rent, and with this question may be considered the kindred risk that the apparatus might be forfeited in bankruptcy proceedings or taken in the execution of an order by a Court of Law.

In dealing with this question it is necessary to distinguish between the statutory and the non-statutory undertakers. In the case of the statutory undertaker, it is usual to provide in the Special Acts and Orders of the undertaking that apparatus and appliances which are let for hire to consumers by the undertaker shall be exempt from all such proceedings, provided that they are clearly marked with the name of the undertaker.

The question to be considered, therefore, is whether the words "let for hire" include a hire-purchase agreement. The answer to this question must depend upon the actual provisions of each particular agreement, bearing in mind that whatever the agreement may be called, the Courts will exercise the right to consider the essential nature of the transaction. The essence of a true hire-purchase agreement is that until the payment of the last instalment the hirer should have the right to give up the apparatus to the owner and thereby terminate the agreement. In doing so, the hirer would, of course, forfeit the whole of the instalments which he had already paid.

If the hirer does not possess this right, then it is probable that the Courts—notwithstanding that the agreement provides that the ownership in the apparatus shall not pass until the payment of the last instalment—will regard the transaction as a sale, the payment of the purchase price being deferred.

Clearly, in such a case no exemption in respect of forfeiture under bankruptcy proceedings or the like could be claimed.

Where, however, the hire-purchase agreement is in correct form it seems clear that apparatus and appliances subject to that agreement would enjoy the same exemption from forfeiture as is enjoyed by apparatus and appliances which are subject to agreements of simple hire.

Position of Non-Statutory Undertakings.

The position with regard to non-statutory undertakers, however, is different, since such undertakers do not enjoy the protection of Private Acts and Orders. It would, however, be open to such an undertaker to include in the hire-purchase agreement power whereby the undertaker may at any time cancel the agreement, and it is clear from decided cases that if the agreement is cancelled before the landlord executes distress or before a claim is made by the Trustee in Bankruptcy, then the undertaker would be entitled to retake possession of the apparatus and appliances which are the subject of the agreement.

Consideration should also be given to apparatus and appliances subject to hire-purchase agreements in an assessment of the gas undertaking for rating purposes under the Rating and Valuation Act, 1925.

It is, of course, clear that so much of each instalment payable under the agreement as represents the hire as distinguished from the purchase of the apparatus should be included in the gross receipts of the undertaking, whereas any expenditure incurred in connection with the hire-purchase agreement should be included in the tenant's working expenses.

It is clear that capital will be necessary to finance hire-purchase transactions, and allowance for this should be made in computing tenant's capital, the usual method being to add to the tenant's capital the total amount of hire-purchase instalments outstanding.

Income-Tax Allowances.

It is, however, with regard to income-tax that the greatest difficulty is likely to arise. In the majority of cases apparatus and appliances of a new type are supplied on hire-purchase in substitution for obsolete models which have been lent to the consumer on simple hire. What allowances are due in respect of this transaction in computing the profits for income-tax purposes? The income-tax practice is to treat apparatus and appliances which are the subject of hire-purchase agreements as having been sold outright at the time that the agreement was made. Such appliances cannot, therefore, be the subject of wear and tear, renewal, or obsolescence allowances. The reason for this is clear. The object of these allowances is to preserve intact the capital of the undertaking, and where an apparatus or appliance is supplied on hire-purchase the capital expenditure is eventually replaced out of the instalments paid by the consumer.

The further difficulty arises, however, as to whether any allowance can be obtained in respect of the obsolete apparatus previously on the consumer's premises. Such apparatus has probably been the subject of annual wear and tear allowances. It would therefore seem equitable that undertakings should be allowed to write off the plant or apparatus (where this has not already been done) by means of an obsolescence allowance. Unfortunately, there is considerable difficulty in doing this, because it is not

easy to contend that the old apparatus has been replaced by the new apparatus, which is regarded by the Inland Revenue as having been sold to the consumer.

Where the obsolete apparatus has not been the subject of annual wear and tear allowances the same difficulty arises in a claim in respect of a renewal, because once again it would not be accepted by the Inland Revenue that under the particular circumstances there had been a replacement.

There may be ways and means of circumventing these difficulties, but it is suggested that each particular case should be regarded on its merits, and probably it would be advisable to obtain expert opinion on this subject.

The points which have been stressed in this article do not by any means exhaust the number of problems which may arise in connection with hire-purchase agreements. These agreements are undoubtedly more complicated than the old simple hire agreements, in the same way that the conditions of modern life are more complicated than those which prevailed in former times.

The whole question may probably be summarized by saying that the most essential thing is that the terms of the hire-purchase agreement should be carefully considered, and that provisions should be included in those agreements for the purpose of circumventing the more obvious points of difficulty.

National Gas Council of Great Britain and Ireland

Meeting of the District Executive Board for Ireland.

The Fifteenth Annual Meeting of the District Executive Board for Ireland was held at Jury's Hotel, Dublin, on Tuesday, Aug. 11.

In the absence of the Chairman of the Board, Mr. J. D. Smith, Mr. J. RONAN presided.

It was reported that since the last Annual Meeting the following Companies had been elected Members: Galway Gas Light Company, Ltd., Killarney Gas Works Company, Ltd., Midleton Gas Company, Ltd., and Sligo Lighting and Electric Power Company.

Mr. J. D. Smith was unanimously elected Chairman for the ensuing year, and Mr. W. J. Grey and Mr. J. Ronan were unanimously elected Vice-Chairmen. The following were elected to the Management Committee: Mr. G. Airth, Mr. George Anderson, Mr. W. J. Grey, Mr. J. M'Nicholl, Mr. B. Mitchell, Mr. W. M. Pettigrew, Mr. A. Robin (Hollywood), Mr. J. A. Rooney, Mr. P. J. Rooney, Mr. J. D. Smith, Mr. H. W. Saville, and Mr. G. Walmesley.

The following representatives to the Central Executive Board were elected: Mr. George Anderson, Mr. W. J. Grey, Mr. J. M'Nicholl, and Mr. J. D. Smith.

Mr. F. J. Edmonds and Mr. A. S. Brook were re-elected Honorary Secretaries.

At the conclusion of the formal business, Mr. E. J. Fottrell, Joint Manager of the National Gas Council, spoke of the work of the National Gas Council. He stated that the recent addition of four Member Undertakings was, he hoped, an indication that the value of the work of the National Gas Council so far as Ireland was concerned was becoming more appreciated. He referred to the prolonged negotiations with the British Government and the mine owners in regard to the coal position, and dealt at some length with the Conditions of Employment Act which had been passed by the Free State Parliament in February of this year. He stated that the Bill, as introduced, called for considerable amendment and that the National Gas Council had authorized the necessary steps to be taken to ensure satisfactory amendments being obtained. The Act as passed was in consequence a distinct improvement upon the original Bill.

A lengthy discussion ensued, from which is appeared evident that the smaller undertakings would experience considerable difficulty in complying with the requirements of the Act, especially in regard to shift work, and it was decided to advise Members to formulate their individual difficulties and to send a written statement to Mr. F. J. Edmonds, Joint Honorary Secretary.

Road Tar Contracts.

A discussion took place in regard to the supply of road tar to the Free State Government, and it was decided to ask the Government to amend the Local Government Acts so as to permit of the supply of road tar by a number of gas undertakings in the Free State instead of by a single contractor, as required by the existing law.

B.C.G.A. IRISH MEMBERS MEETING.

The Annual Meeting of the Irish Members of the British Commercial Gas Association followed.

The following were unanimously elected to represent Ireland on the General Committee of the Association: Mr. G. Airth (Dundalk), Mr. W. J. Grey (Dublin), Mr. J. D. Smith, M.Inst.C.E. (Belfast), and Mr. G. Walmesley (Londonderry).

Mr. J. D. Smith, M.Inst.C.E. (Belfast), was unanimously re-elected as the representative for Ireland on the Executive Committee of the Association. Mr. J. C. Walker, the General Secretary of the Association, reported that alterations to the rules with regard to the constitution and membership of the Executive Committee were to be submitted for approval and adoption at the Twenty-fifth Annual Meeting of the Association at Bath, under which Ireland would be entitled to an additional representative on the Executive Committee. It was agreed that no action should be taken in this matter pending the approval of the alterations at the Annual Meeting.

Newspapers recommended to carry the Association's advertising during the current financial year were submitted and, after full discussion, approved. It was agreed also that the scheme under which regular supplies of posters were made to subscribing members should be continued.

Time did not permit of a discussion with regard to the work and policy of the Association, but Mr. Walker indicated that the Association was anxious to examine what effective steps might be taken to establish and maintain a closer contact with members, particularly with regard to sales development, and that this whole matter was receiving the careful consideration of Headquarters. He hoped to be in a position to report later.

The meeting closed with a unanimous vote of thanks to the Chairman, Mr. J. Ronan.

The Battersea Polytechnic

Course in Gas Technology and Cookery Demonstration

A three-term evening course in gas technology, demonstrating in practical cookery, and voice production has been arranged to meet the needs of women who already hold a Diploma or Certificate in Domestic Science or who are taking a training course in preparation for such a qualification, and who wish further to qualify themselves for work as demonstrators with gas undertakings or for other posts connected with the Industry where such knowledge would be required.

The instruction, which will be given on two evenings of the week, will be in the form of lectures and practical work. It will deal with gas and gas appliances of all kinds and cookery demonstrations both from the manufacturer's and the gas undertaking's view-point, and will include some training in the testing of gas appliances and dealing with faults. The training in voice production will be planned in relation to the students' needs as demonstrators. Visits to gas-works and showrooms to inspect equipment, &c., will be arranged and will form part of the course.

An examination in theoretical and practical work will be held at the end of the course, and a certificate will be issued to successful candidates. The fee will be 30s. for the three terms; the classes will be held every Tuesday and Thursday evening from 6.30 to 8.30 p.m., commencing on Tuesday, Sept. 22, 1936.

The Irish Association of Gas Managers

Annual Meeting at Dublin

The President and Committee.

The Annual Meeting of the Irish Association of Gas Managers was held on Aug. 11, 1936, at Jury's Hotel, Dublin, under the Presidency of Mr. P. J. MacEvoy (Managing Director of the Midleton Gas Company, Co. Cork), whose Presidential Address was published in last week's issue of the "JOURNAL."

Though, owing to circumstances over which they had no control, there have not been fifty annual meetings of the members, the Irish Association of Gas Managers this year celebrate their Jubilee. To-day sees the Association, which was formed fifty years ago, strong and active, and enjoying that unity which, as Mr. George Airth pointed out—when thanking the members for a handsome presentation on his retirement from the position of Hon. Secretary and Treasurer, which he had held for the long period of 27 years—is required to make an Association prosperous. In all its aspects this year's meeting, under the Presidency of Mr. P. J. MacEvoy, of Midleton, Co. Cork (whose geniality and forceful character made everything "go with a bang"), must be acclaimed a success. Mr. MacEvoy was, indeed, in every sense of the term "a host in himself."

Meetings of the Association are the occasion of gatherings of friends many of whom do not have an opportunity of seeing one another at other times, and this year there were, as usual, a number of cross-channel visitors. Most had been present at previous meetings, and doubtless hope to attend future ones. They included Mr. J. R. W. Alexander, who, as Secretary, represented The Institution of Gas Engineers; Mr. E. J. Fottrell, Joint Manager of the National Gas Council of Great Britain and Ireland; Mr. J. C. Walker, General Secretary of the British Commercial Gas Association, Mrs. Eileen Murphy, Home Service Director of the Association, and Mr. T. W. Coghlin, the Association's Publicity Officer.

The business proceedings took place in Jury's Hotel, where it was a real pleasure to everyone assembled to be welcomed once again by the city's versatile Lord Mayor, Alderman Alfred Byrne, T.D., whose overwhelming popularity has been demonstrated by his re-election for a further term of office.

The LORD MAYOR said that once again he wished to thank the Committee sincerely for having given him an opportunity of being present at the opening of the conference. He had met the members many times before, and it gave him the greatest possible pleasure to welcome them to the city, and to express the hope that the future held many bright days in store for them and for the undertakings which they represented.

Association's Increasing Strength.

Continuing, the Lord Mayor heartily congratulated the members on the working of their Association and of their undertakings during the past year. He gathered that the Gas Industry was not afraid of competition. They had the goods to sell—and, as they believed, the best goods—and therefore there need be no fear for the future. He was glad to know that their membership was increasing, and that altogether the Association was on very safe ground. There were members present from both sides of the border, and it was a great pleasure to see them all together, for such conferences made many friendships among the people north and south.

The PRESIDENT declared that they were all extremely grateful to the Lord Mayor for his cordial welcome, and for the honour he had conferred upon the Association by his presence that day. Alderman Byrne was a realist of the first water, and he thoroughly appreciated the work which the Association and the Gas Industry generally were doing in the economy of the State. Dublin itself afforded a striking example of the Industry's contribution to the economy of the State. There were 1,400 people employed, with a wages bill of over £250,000, and taxation charges of some £65,000. Members of the Gas Industry had a particular admiration for the Lord Mayor, because they realized his sterling worth. They congratulated him heartily upon having received once again the highest honour which his city was able to bestow. Might he be

At the Irish Meeting.

long spared to carry on his splendid work for Dublin and for Ireland.

Presidential Address and Medal.

Mr. MacEvoy then proceeded to deliver his Presidential Address, which will be found on p. 386 of last week's issue of the "JOURNAL." At its conclusion,

Mr. J. A. ROONEY (Drogheda), Immediate Past-President, proposed a very hearty vote of thanks to the President for his well thought-out Address, and for the efficient way in which he had piloted the Association through the past year. They all appreciated thoroughly what Mr. MacEvoy had done. He had carried out his duties with satisfaction to everyone who had been brought in contact with him.

The PRESIDENT (the vote having been accorded with applause) expressed his gratitude to the officers and members for the loyalty and enthusiasm with which they had supported him throughout the year. This co-operation had made his term of office an extremely pleasant one.

Mr. ROONEY, with a few happily chosen remarks, then presented the President's Medal to Mr. MacEvoy.

Committee's Report and Accounts.

Mr. L. W. DALBY (Kilkenny), the new Hon. Secretary and Treasurer, next read following report of the Committee:

This year your Committee have to report that the Association is still continuing to prosper. The last meeting was very largely attended. The Papers read were instructive and interesting and lead to good discussions.

Your Committee regret to have to record the deaths of our two oldest members—Mr. T. J. Reid, who joined in 1895, and

Mr. H. Kirkham in 1897. Both were Past-Presidents, the former in 1907, and the latter in 1918. Both were of most genial disposition, full of brotherly love, and ever willing to share their knowledge to the full whenever it was asked. Mr. Reid was a brilliant debater, and was always listened to with rapt attention. Mr. Kirkham was of a more retiring disposition, and placed his facts tersely and with force. They will be greatly missed at our annual meetings. May they Rest in Peace.

The gas-works in the Free State have been relieved of the burden of taxation on the coals imported (5s. per ton), but have had the "Employment Act, 1936" imposed on them instead. This Act will be very serious to some of the smaller companies, with its twelve days extra holidays imposition, with full pay.

Your Secretary has taken up the matter of shift work with the Ministry of Industry and Commerce, but so far has only received two acknowledgments of the correspondence.

The ballot papers sent in are again on the small side, and your Committee hope that more interest will be taken in nominating members for office in the future.

Your Committee feel most grateful for the generous subscriptions sent in on behalf of the Drohan Fund. Our own members sent in the magnificent sum of £241 19s., and this was augmented by a further sum of £300 8s. 5d. from members of the profession all over the world, making a grand total of £542 7s. 5d. We are particularly indebted to The Institution of Gas Engineers, who, through their Secretary, Mr. J. R. W. Alexander, sent out circulars to all their members, and increased the total to so large a figure. We express to them our grateful thanks for their contributions to this most deserving charity.

We regret very much indeed the retirement of Mr. Airth, who has been Secretary for over 27 years. The continued success of our Association has been in a great measure due to him. He has been indefatigable in his work on our behalf, and he has held high the interests, prestige, and dignity of our profession. We shall miss his kindly, helpful, and humane assistance. George Airth embodied in every sense of the word the perfect christian gentleman. We have taken the opportunity of making him a presentation to mark our deep appreciation of his sterling worth, and we are grateful for the very generous response which has been made to this token of our regard and affection.

We have nominated Mr. Dalby, who is well known and respected by the Association, and we feel sure that he will be a worthy successor to a great predecessor. We make an earnest appeal to our members to co-operate in every possible way with our new Secretary, to make his very onerous duties as pleasant as possible.

At the moment we are passing through critical times, and it is essential that our Society should be strong and virile, to cope with the involved problems which face us. It is therefore up to each and every member to pull his weight, and make a co-operative effort to serve, through our Association, the great Industry of which we are custodians.

We propose to make Mr. George Airth a permanent member of the Committee, so that we shall be assured of his continued guidance in the future.

The balance to credit in Treasurer's hands is now £155 19s., and the balance to credit of the Drohan Fund is £452 7s. 5d.

Mr. L. P. PHILLIPS (Dublin), the Auditor, summarized the balance-sheet, pointing out that there was a satisfactory balance in the bank amounting to about £160.

The report and accounts were adopted without discussion, on the proposition of Mr. L. G. YOUNG (Carlow), seconded by Mr. G. WALMSLEY (Londonderry).

On the proposition of Mr. J. A. PEMBERTON (Sligo), seconded by Mr. F. G. McELWEE (Coleraine), Mr. A. Law, of Limerick, was appointed District Representative on the Council of The Institution of Gas Engineers.

The Irish Gas Industry—To-Day and To-Morrow.

The PRESIDENT then called upon Mrs. Eileen Murphy (Home Service Director, British Commercial Gas Association)—who, he said, needed no introduction from him—to read a Paper on the subject of the Irish Gas Industry (which will be published in next week's issue). After the reading of the Paper, the PRESIDENT said they had had an extraordinarily fine treat, and he had great pleasure in proposing that Mrs. Murphy be made an Hon. Member of the Association, to mark in a small way their deep appreciation of her work for the Gas Industry.

Mr. A. KIRKHAM (Enniscorthy) said that, having known Mrs. Murphy's family years ago at Tramore, he would particularly like to second the resolution, which was carried with applause.

Mrs. MURPHY thanked the members for the honour they had done her.

Mr. J. C. WALKER, on behalf of the British Commercial Gas Association, remarked that it was a very graceful gesture to make Mrs. Murphy an Hon. Member of the Association. "I am quite sure," he added, "she will prove a very worthy Member of your very happy body."

On the motion of the PRESIDENT, the "B.C.G.A." were cordially thanked for having provided copies of an attractively produced and arresting pamphlet on the Irish Gas Industry, as an appendix to Mrs. Murphy's Paper.

Reinforced Concrete Construction.

Mr. P. J. SHEEHAN, of the Cork Gas Company, contributed the second Paper to the meeting, and it dealt with "Modern Developments in Gas-Works Practice, with particular reference to the Utility of Reinforced Concrete Construction." This Paper will be found elsewhere in this issue of the "JOURNAL."

The PRESIDENT, proposing a hearty vote of thanks to the Author, said it was obvious Mr. Sheehan knew his job from beginning to end. The Paper would be of great value to all of them.

Office-Bearers and New Members.

Messrs. W. Cole (Dublin) and E. W. King (Elland) were appointed Scrutineers of the ballot papers, and subsequently reported the following elections:

President.—J. A. Pemberton, Sligo.

Vice-President.—A. Law, Limerick.

Members of Committee.—P. J. Rooney, Strabane; G. Airth, Dundalk; and P. J. Sheehan, Cork.

District Representative to Council of Institution of Gas Engineers.—A. Law, Limerick.

Auditor.—L. P. Phillips, Dublin.

Hon. Secretary and Treasurer.—L. W. Dalby, Kilkenny.

As Ordinary Members.—M. Fogarty, Killarney; and J.F. Fitzpatrick, Cavan.

Date of Meeting.

Before the adjournment, there was some discussion as to the month in which the Annual Meetings of the Association could most conveniently be held.

Mr. F. J. EDMONDS (Waterford), who raised the question,

asked whether it would not be better for the meeting to take place in July, rather than August, which was the holiday month, and therefore likely to prejudice the attendance.

The PRESIDENT remarked that personally he was quite willing to have the meeting in July, but, of course, each one had a tendency to regard matters from his own particular point of view. Any date they might fix upon must prove inconvenient to some. It was entirely a matter for consideration by the members.

Mr. GEORGE AIRTH said the rules stipulated that the Annual Meetings should be held at such time and place as might be arranged, but all the time that he had been Secretary the members had been good enough to give way to his wishes and have the meeting in August, because he could not possibly be present in July.

A MEMBER suggested that they might have the meeting in June.

Mr. J. M'NICHOLL (Cork) was of opinion that they should rule out both July and August. In June there was the meeting of The Institution of Gas Engineers, and he inclined to the view that September would be better.

Mr. AIRTH thought that a questionnaire should be sent out, so as to ascertain the views of the members generally.

Mr. EDMONDS said that, in the interests of the Association, he proposed that this be done.

The PRESIDENT seconded, and the proposition was agreed to.

In the interval between the close of the morning's proceedings and the private meeting in the afternoon of the National Gas Council of Great Britain and Ireland, the members and their lady friends took light refreshments, on the invitation of the President.

A Day at Kilmacurra Park.

The following day, Wednesday, was devoted to an excursion by motor coach to Kilmacurra Park, which, the weather proving ideal, will rank high in the Association's outings. In saying this, the intention is not to convey an idea that bright sunshine was the only enjoyable feature, but that the sun was the one thing needed to present all the other attractions in their most favourable aspect. The amenities of the estate surrounding the Kilmacurra Park Hotel are extraordinarily good, and the entire park, gardens, and grounds of about 600 acres are available for the enjoyment of visitors. Indoor seating accommodation is provided for 500 people, and the catering is both good and plentiful.

Many of the party played golf, a few rode on horseback, and a smaller number still disported themselves in the large open air fresh water swimming pool. Situated in County Wicklow, about 36 miles from Dublin, Kilmacurra Park lays high claims to beauty, which are justified to the full.

The return to the city after tea brought to a close a meeting which had proved memorable in various ways.

Golf Competition.

The usual Golf Competition was played at Kilmacurra during the afternoon, and resulted as follows:

Grant Cup and Replica . . .	P. J. MacEvoy
Captain's Prize.	W. F. Ross
Best Gross Score	S. Hall
Second Prize	G. Airth Westwood
Third Prize	G. Walmsley and T. D. Hamilton
Ladies' Putting Competition. .	Mrs. J. A. Rooney, Miss Evelyn Rooney, and Mrs. P. J. Rooney

Mrs. MacEvoy presented the prizes, and was thanked for doing so, on the proposition of Mr. J. A. Pemberton.

The Golf Officials and Committee for 1936-37 were elected as follows:

Captain	G. Walmsley (Londonderry).
Secretary	I. D. Hamilton, J.P. (Comber).
Treasurer	Capt. Allan Robin (Holywood).
Committee	J. K. Harrison (Armagh); A. Law (Limerick); P. J. MacEvoy (Midleton); P. J. Rooney (Drogheda); J. A. Pemberton (Sligo).

The Annual Dinner

Presentation to Mr. George Airth

Mr. George Airth, of Dundalk, the retiring Hon. Secretary.

Mr. L. W. Dalby, of Kilkenny, the new Hon. Secretary.

The Annual Dinner, at which over a hundred members and friends sat down in the evening at Jury's Hotel, was, as usual, punctuated with music, song, and witty speeches, but on this occasion there was an added item which gave rise to feelings both of pleasure and of regret. The President was in the Chair, and by his side once again sat the Lord Mayor.

The PRESIDENT having begun the toast list with "Ireland; the land we all love,"

Mr. F. J. EDMONDS proposed "Prosperity to the City of Dublin," coupling with it the hope that some of this prosperity would be handed on to the Provinces. They greatly appreciated the Lord Mayor's presence at the conference, as well as at the dinner, but it was to be regretted that they had no representative of the Dublin Gas Company with them.

The LORD MAYOR said that, if Dublin was prosperous, he earnestly hoped that the rest of Ireland would get its share. There was plenty of room for new industries in most of the towns of Ireland, and especially in those which possessed a good gas supply. The Association represented a public utility service which had survived troublous times without asking for any subsidy, and the authorities should be very grateful to them for upholding an industry which gave work to the workers and satisfaction to the consumers.

"The Gas Industry and Kindred Associations" was submitted by Mr. A. LAW, who said it was impossible to speak too highly of the work of kindred associations.

Response was made by Mr. E. J. FOTTRELL and Mr. J. C. WALKER. Mr. Fottrell declared that the greatest possible credit was due to the Corporation of Dublin for the broad-minded spirit which they had exhibited, with regard to making available to the citizens both gas and electricity supplies, though the electricity supply was a public one and the gas supply was in the hands of a Company. That broad-minded spirit might well be emulated by local authorities, both metropolitan and provincial, on the other side of the channel.

Mr. J. A. PEMBERTON proposed "The President," remarking that in or about the year 1910, when at the Waterford Gas-Works, he had occasion to see Mr. C. B. Outon, who was at that time Gas Engineer to the Great Southern and Western Railway, and with whom he was well acquainted. On that occasion he met Mr. Outon's Assistant, who was Mr. MacEvoy, and although he was a stranger he was immediately made at his ease, and their business was conducted in an amicable manner. When subsequently he met Mr. MacEvoy on his appointment to Midleton, the thought passed through his mind that Mr. MacEvoy would not remain long there. However, he started an engineering business, and by industry and resource extended his operations, so that Midleton had become his home. Mr. MacEvoy had confidence in the Gas Industry, and his son, following in his footsteps, had become a member of the Association. He had filled the Presidential Chair in a most capable manner.

The PRESIDENT replied that his reception at the hands of the members had been ample compensation for anything he had done. He had been deeply touched by their extraordinary

loyalty. The idea he kept in mind was that "if at any time you can help a lame dog over a stile, you ought to do so." If in Ireland they had a little more understanding, and a little more co-operation, the country would be an infinitely happier, and certainly a far greater one. He was proud to represent that night this Association of Gas Managers of all Ireland.

The remaining toasts were "The Ladies" and "The Press." When submitting the former, Col. GLOVER provided a profusion of most beautiful Killiney roses, which were presented on his behalf to the ladies, who were delighted with the flowers and with the terms in which their health was proposed. Eloquent response for them was made by Mr. W. H. Ainsworth.

The toast of "The Press" was in the hands of Mr. G. WALMSLEY, who spoke in eulogistic terms; and in his reply, Mr. ALFRED HARRISON (Director, Walter King, Ltd.), on behalf of his colleagues and himself, thanked Mr. Airth for his sympathetic help on every possible occasion. Mr. Harrison said that for more than twenty years he had not missed a single meeting of the Irish Association, and from the very first hours he had spent in the country, Mr. Airth had been to him a staunch and steadfast friend.

Appreciation of Great Services.

The dinner speeches being concluded, a little ceremony followed which marked the high esteem in which Mr. George Airth is held by his fellow members of the Irish Association, and their appreciation of the great services which he has rendered during his long period of office as Hon. Secretary and Treasurer, in which office Mr. L. W. Dalby is now succeeding him.

The PRESIDENT said he now came to his most pleasing task of all. Mr. Airth, after having given a lifetime of service to them, was retiring from the Secretaryship, and he (the President) had real delight in presenting to him, on behalf of the members, a wireless set and cheque, and in wishing both Mr. and Mrs. Airth every happiness in the future. "I hope, when you turn on the wireless, you will always remember the deep affection which we of the Irish Gas Industry feel for you." [Loud applause.]

After the health of Mr. and Mrs. Airth had been enthusiastically drunk, at the call of the President,

Mr. GEORGE AIRTH, acknowledging the presentation, said the all unnecessary and too kindly words of the President made this a hard task. "It is," he went on, "very difficult to find words to express to you my appreciation of the honour you have done me, but I am sure you will take the will for the words, and in that spirit I ask you one and all to accept my best thanks. You have put me in an embarrassing position again, for this is the second time I have had to thank you for a magnificent presentation. The last presentation you made to me, in 1925, well repaid me for the interest I have taken in the welfare of our Association, of which I have now been a member for 36 years, 33 of which I have been in harness, either on the Committee, as Vice-President, President, Assistant Secretary, and 27 years Secretary and Treasurer.

Our Association is now celebrating its Jubilee year, and I think it is unique in that it has had only two Secretaries during that time—Mr. James P. Whimster, of Armagh, who was its founder, philosopher, guide, and friend, and myself, his humble follower. Mr. Whimster was a most able, faithful, and conscientious worker, and left his mark on the records of those who helped our profession to become the great Industry which it is to-day. I am happy to say that during all the time I was your Secretary I have never lost a friend, and I believe I have the honour of calling each one of you my friend. The assistance I have received from Past-Presidents, Members of Committee, and Members is what has made the Irish Association of Gas Managers what it is, for without that assistance the Association would never have grown to its present proportions. No one man can make an Association prosperous. It requires unity, and we have always been a united body.

During my connection with the Association we have had 30 Presidents, 11 of whom have passed over. Mr. J. E. Enright was President in 1918. In 1915 we had no meeting. Mr. Young was President in 1920 and 1924. We had no meetings in 1921, 1922, and 1923, but a considerable amount of subscriptions came in to swell our credit balance. Our first joint meeting with the National Gas Council took place in 1925, when we affiliated with The Institution of Gas Engineers. I cannot draw to a close without referring to your great friend and mine, the late Mr. G. W. Norman. It was a great loss to the Association when he passed over, for he was our personal canvasser for new members, and he arranged all our excursions for many years. We have a good man in his place, Mr. L. P. Phillips, as Auditor and collaborator for years now in running our excursions. To him I pay my tribute for the excellent services he has always been willing to bestow.

And now may I put in a word for our new Secretary, Mr. L. W. Dalby? By this time next year he may realize it is not all a bed of roses, but if you do your part, as I beg of you, it will not have too many thorns. Please answer all appeals he makes to you, as soon as possible, and be sure to enclose cheques or money orders. It will make his life easier and ensure you a good Secretary, for I am certain he intends to do his bit.

I would thank you for your generosity in the matter of any subscriptions for which I have had to appeal to you. They have been as follows: Ellicott Fund, £31 15s. 6d.; Fitzpatrick Fund, £122 10s. 6d.; Buckley Fund, £120 5s.; Drohan Fund, £241 19s.—making in all £516 10s. By the generosity of our friends, the Drohan Fund stands at £542 7s. 5d., due to the co-operation of our good friend and fellow member Mr. J. R. W. Alexander, Secretary of The Institution of Gas Engineers.

I thank Mr. Harrison for his nice words, for the work he has done for the Association, and for the assistance he has given me, over so many years. His friendship has been a pleasure to me, and I am glad that he has been able to keep a promise he made me many years ago, that he would try to attend our meetings regularly, at any rate so long as I remained Secretary.

Once more I thank you for your magnificent gift, which I hope will "speak," and remind me of the happiest labour of my life, that has characterized all our dealings with each other, and especially of the generosity and goodwill which have prompted this presentation.

Mr. J. A. ROONEY said he would like to support the remarks regarding Mr. Airth which had been made by the President. During his own year of office, he had received every possible assistance from Mr. Airth. Without that help he could not have carried on as he did. He was delighted to associate himself with the presentation, and expressed the hope that Mr. and Mrs. Airth might be long spared, with good health, happiness, and prosperity, to enjoy the gifts, which the members felt were not good enough adequately to mark his great services. Through all these years Mr. Airth had been the mainspring of the Association.

Modern Developments in Gas-Works Practice

by
P. J. SHEEHAN,
of the Cork Gas Company

In this Paper, which he presented at the Annual Meeting of the Irish Association of Gas Managers in Dublin on Aug. 11, the Author dealt with the subject with particular reference to the utility of reinforced concrete construction.

The importance of modern sales methods has been the object of much attention of late by the Industry. (*a*) *Analysis of Gas Sales* with a view to ascertaining how far the full gas service has been made available to each consumer, domestic and industrial. (*b*) *Promotional Tariffs* to make yet more attractive and more fully available the advantages which follow a complete service of gas. (*c*) *Publicity and Advertising* for the purpose of attracting new consumers and informing existing ones what that complete service has to offer them in the home and in the factory. Attention has been directed to the importance of maintaining well equipped showrooms and conducting practical demonstrations in the use of gas appliances. To the same end the idea has been emphasized that service to the consumer, in its modern conception, does not end when you have made a gas supply available to the consumer.

These matters are of considerable importance to the Industry and presuppose a realization of the paramount need of sound technical control in manufacture and distribution as a first essential. Indeed, it would be in the nature of an anomaly to base the finest technique in selling the products of an industry, faced with intensive competition, on a foundation of different works and distribution practice, particularly where these things demand the highest technical skill for efficiency.

All these factors must balance, not one of them is more important than the other, and for the success of the whole enterprise that harmony must be maintained by diligent employment of sound modern practice at every stage.

The Author makes no apology for directing attention to the matters indicated by the title of this Paper. The recurring expenditure in repairs and renewals of gas-works plant is a factor of some importance, which must be reckoned with in our efforts to give the consumer gas at the lowest cost per therm. Many of the recent developments are largely influenced by the desire to effect economies in repairs and renewals, by removing causes of corrosion or by substituting more permanent materials to resist corrosion. For example, the practice of (*a*) gas-dehydration and (*b*) oil filming of gasholders.

The evolution of the dry gasholder and the attention directed to the composition of gasholder sheeting are indications that even where corrosion is not of primary importance it is, nevertheless, a most important consideration.

If structural steelwork is embedded in coke heaps it will have only a very short life, particularly where coke quenching accelerates the destruction. Steel purifiers, if in contact with spent oxide for long periods, will share a similar fate. These are, perhaps, extreme examples of the conditions favouring corrosion, but who will deny that they exist in some degree on every works.

Probably the most striking development is in the increasing substitution of reinforced concrete structures for steel and cast-iron structures in an effort to extend the useful life of such miscellaneous works as the following: Telpher supports, crane runways and gantry track supports, coke wharves and quenching benches, coke hoppers, water towers and tanks, purifier structures, and substructures for vertical retorts, in addition to its more usual employment in the construction of buildings.

The advantages of reinforced concrete may be summarized as follows:

(*a*) It is fireproof.
(*b*) It is water-proof.
(*c*) It is proof against the corrosive agents encountered in a gas-works in the atmosphere by the action of weak acids and moisture, or such favourable conditions for corrosion as may exist due to the location of the structure and its maintenance as already indicated.

These advantages can only be secured by the exercise of great care and precautions at every stage from the first designs to the completed structure.

Design.

A first essential is good design of the structure as a whole, its members, the steel reinforcement, and the concrete. The execution of the work should not be separated from the design, expert supervision and successful execution can be expected only when both functions are combined. The engineer who prepares the design should therefore have the supervision of the execution of the work. If this is not possible, then supervision should be exercised by an engineer equally qualified, who has had consultations with the designer regarding the design and plans for the structure. More will be said at a later stage on this very important aspect of the work.

The formwork or casing must be well designed and braced and carefully fitted. Forms which leak water and cement will cause the concrete to be porous and honeycombed at the most vital part, namely, the surface. Ill-fitting forms will spoil concrete that has been well graded and placed.

The removal of the formwork should take place in correct order and not prematurely, and without disturbing the formwork and bracing to other parts of the structure. Good joinery work is essential in the construction of forms and it is almost a truism to state that the more complex the structure the more important is this factor. The whole design of formwork is based on these precautions.

General Supervision.

First class supervision throughout construction of the concrete quality, of the tying and placing of the steel in the forms, is necessary. The steel should be correctly placed according to the drawings, and all bends should likewise be in accordance with the drawings. The shear members and column hoops should be accurately and securely tied.

The actual concreting should proceed systematically—the forms well swilled out with water and all foreign matter removed through cleaning doors in the forms, preferably at the lowest points, usually placed in the column forms. The steelwork should be spaced from the forms to give the specified cover of concrete, and packs used for the purpose where they require to be left in place should be broken tiles or like material, but never timber. Care should be taken that packs do not exercise much strain on the reinforcement, and should only be removed as the work proceeds and not when any initial set has taken place, otherwise the "bond" may be impaired.

Work should only be stopped at certain points—*e.g.*, in the case of columns, just below the soffits of intersecting beams and girders to prevent "hanging up" of concrete at this point due to shrinkage of concrete in the columns leaving a plane of cleavage between the concrete held by the intersecting members and the concrete already placed in the columns. In the case of slabs, beams, and girders, work should cease at the centre of the span by a sharp vertical section. The one qualification, however, is in the case of a girder having an intersecting beam at its mid-span. Obviously, then, the work should stop at a point well clear of the beam, and clear of that part of the slab which is considered in the design to form part of the beam in T-beam action.

Experience Necessary.

From the foregoing it will be seen that work of this description is better entrusted to firms with experience in reinforced concrete construction. Remarks have been made on the question of design and supervision and the importance of co-ordinating these functions. No less important is consideration of the qualifications of the contractor, builder, and operatives. The builder without some know-

ledge and experience of this work will not appreciate the necessity for such accuracy and precautions, and unsatisfactory work will result.

Some firms specialize in preparing designs for reinforced concrete structures and have a proprietary interest in patented steel reinforcement. Designs are submitted from preliminary plans and data supplied by the engineer or architect on the understanding that reinforcement is supplied by the firm.

It is not surprising, therefore, to find rather more steel is specified than is economically necessary, and good construction rendered difficult by reason of the close spacing of the bars. Tenders from builders or specialist constructional firms are then invited by the architect or engineer or the designing firm. It is difficult to co-ordinate work under such circumstances, and the results will only occasion some disappointment.

Patented steel reinforcement is not necessary for most structural work. Expanded Metal, " Hy-rib," and other patented mesh reinforcements are admirably suited to particular types of construction. Ordinarily, mild steel of standard specification (safe tensile stress 16,000 lb./sq.in.) is quite suitable for reinforced concrete. Very little is gained by employing high carbon steel. There is a risk, in fact, in the use of such steels. Bends made from the heaviest sizes, by heating, may be quenched in water by workmen in ignorance of the fact that brittleness is caused thereby. It is not surprising and a matter for congratulation when some few break before being placed in the forms.

The steel should be free from any scaly rust—any oil or grease should be cleaned off carefully. Heavy bends should be examined to see that they have not had too much " fire "—overheating may cause excessive scaling with consequent reduction of the section. The bends should be truly made and free from winding, and a full 180° bend is recommended. Stirrups and shear members should be made true to size on a " jig " so that when assembled they fit accurately. All hooks should be of full length, as shown on the plan. Jigs and templates are also a great help in assembly of the steel and in placing the bars in correct position relative to the forms during construction.

The advantages we have already cited for reinforced concrete, as a more permanent constructional medium with a corresponding saving over other materials in maintenance charges for cleaning, painting, repairing, and renewals, are dependent first on the quality of the concrete which is the protective medium for the steel. It must itself be highly resistant to corrosive conditions and the beams and slabs of sufficient strength to carry the stresses to which it is subjected in the structure.

Permanency, rather than strength, should be the criterion of concrete quality. It is the determining factor, as it is possible to secure the required strength very readily by the addition of sufficient cement.

Portland cement is now manufactured of consistently good quality and conformable to standard specification. Permanency is dependent on a number of factors and these factors are interdependent.

(1) The concrete must flow easily in the forms, holding all the aggregates and move along with gentle rodding and without excess of water. (Good workability.)

(2) The concrete must be of the high density—the greater the density the less will be the voids and a close impermeable material will result.

Tests from time to time by weighing of, say, ½ cu.ft. measure or bucket of known weight will check up on this factor and see that it is maintained throughout the job. It may be found that the most dense concrete is not easily workable unless an uneconomical amount of cement be added to increase " unctuosity." There is little to justify this course, as very rich mixes are liable to excessive shrinkage.

A better course would be to add the minimum of fine aggregate and water to produce the desired workability without impairing unduly the factor of high density. A practical test if one has experience of the aggregate used is to tap the freshly mixed concrete lightly with the sole of the shoe. Three light taps should produce a fine, close, smooth finish. More than three would indicate a rather harsh mix and a lesser number than three that rather too high a proportion of fines was present. Of course, this is only a rough test.

(3) The third factor is suitable cement content. It has been found that the strength of cement and water mixes increases with increasing amounts of water up to a certain optimum and thereafter the strength rapidly diminishes. A similar test, using sand, cement, and water, reveals a like result; and, other things being equal, holds also in the case of concrete. In general, the proportion of water to cement should be kept as low as possible consistent with good workability. Water-cement ratio is now specified in good practice.

Not more cement should be used than is economically necessary to produce the requisite strength when cured. When these conditions are observed the concrete may be said to have a suitable cement content.

A Changed Outlook.

The whole question of aggregate grading by sampling on sieves, re-combining where necessary, or additions of finer or coarser aggregate as required to produce a type of grading of known strength forms the fascinating study of concrete-mix design*, but is of too wide a scope for a Paper like this. The Author merely wishes to indicate the changed outlook with regard to concrete production that it is a composite material which must be carefully designed and not a haphazard collection of sand and stones with some cement to bind the lot together. The emphasis is now placed upon the quality, grading, and testing of the aggregate rather than on the quality and testing of the cement. Improved manufacturing methods in the cement industry has helped here. There has been a fatal temptation to use inferior aggregates from waste materials, broken retorts, old firebricks, and clinker breeze. There is unfortunate evidence that these materials were used freely in the past and a mass concrete wall of clinkers interspersed with plums of broken retorts is hardly to be recommended even from an aesthetic viewpoint. An invariable attachment to the quite arbitrary proportions of 1:2:4 or 1:3:6 in grading the materials results in various subsequent attempts to repair porous concrete by cement washes and the like; methods alike costly and hardly effective. Cement washes craze and peel off and for the protection of steel reinforcement not properly covered, less permanent than a coating of paint.

Water Proofing.

For any structures requiring water-proofing it is inadvisable to use rapid setting cements. It is too much to expect of even the best water-proofing compounds that large voids between aggregates poorly graded can be effectively sealed by these mediums. It is better to consider their use as a form of double insurance against the risk of leakage.

In the construction of our water tower, 20,000 gallons capacity, the water-proofing was used only on the two rendering coats on the inside. Rendering was only used because the wall was constructed between two concentric rings 3 in. apart of expanded metal lathing which served the double duty of reinforcement and framework and saved the cost of elaborate timbering. The finished thickness, 5 in., was made by two coats of rendering work on the inside and outside of the wall. The work was tested by filling the tank partially and any slight leakage on the periphery noted. The rendering coats with water-proofing were next applied on the inside and the tank was then filled. No leakage showed, and the work was finished off by the two coats of rendering on the outside. A ring-beam foundation was used because of the unsatisfactory nature of the site—a sloping bank.

The steel structure of a horizontal stage floor on the discharging side suffers from corrosion, particularly on the side adjoining the bench, due to the preliminary quenching of coke on the conveyors. Floor rolled steel joists, resting on buckstay brackets, become seriously deteriorated. Similarly the structure suffers in proximity to tar towers and quenching wells. On the charging side conditions are better, but a monolithic structure, as can be arranged using reinforced concrete construction, would provide better continuous support for machine rails.

In an extension carried out some years ago it was therefore decided to employ reinforced concrete, and the floors were designed for a loading of 2 cwt. per super foot. Longitudinal girders were arranged under the machine rails, supported by columns in line with the bench buckstays. Beams framed into the girders and columns formed the main framework and a slab thickness of 4½ in. covered by blue brick in the ordinary way. The slab between the inner rail and the bench was supported by cantilevers from the girders and columns. The floor was, therefore, independent of the bench and some 3½ in. from the brickwork. A few courses of brickwood corbelling, just above the paved floor, formed a seal, preventing any coke or dust from falling from the stage floor while permitting free movement of the bench.

It is interesting to note that this floor is as nearly monolithic as it is possible to construct it, the whole work from the commencement of concreting to the end being con-

* Reference is made to a series of excellent Papers written by Prof. H. N. Walsh, M.E., D.I.C., of Cork, in the appendix.

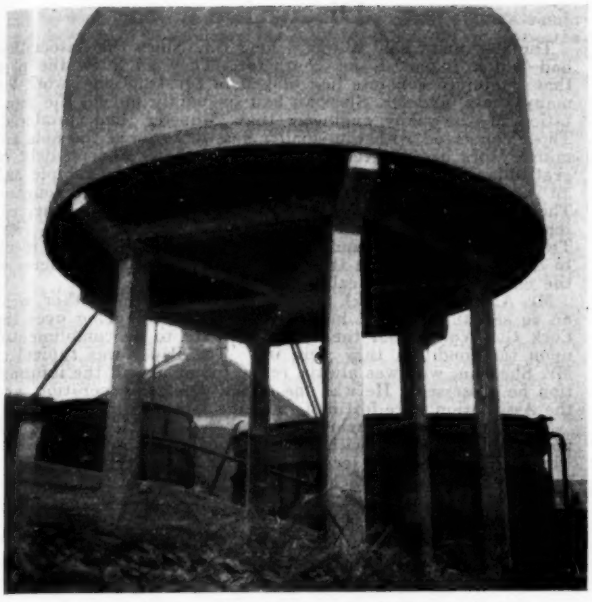


Fig. 1.—Water Tower; right background, Reinforced Concrete Liquor Tank built inside old Cast Iron Tank.

structed by continuous shift work in about twenty consecutive hours. Large cleaning doors were cut in the forms, so that all coal dust lodged therein was quickly removed and the forms kept clean during the progress of the work.

The screening plant is mounted over reinforced concrete hoppers. There is no perceptible vibration of the structure due to the moving machinery of the conveyor and screening drives as one would expect in the case of a steel structure. The hoppers are subdivided to suit the various grades of coke. During construction the possibility was debated of dispensing with inner form work for the sloping slab bottoms, but the concrete would require to be placed in too dry a condition for satisfactory work, so inner forms were designed of 1½ in. tongued and grooved boards slipped inside 4 in. by 3 in. bracings two or three at a time as the work proceeded up the sloping side; the bracings were secured and positioned by pipe sleeves and bolts. A spell of unexpected frost ensued shortly after the placing of this work, and tarpaulins and formwork were placed around the hoppers enclosing the space below the slabs. Coke braziers were lighted and spaced about 20 ft. apart in the enclosed space and kept lighted while the frost threatened and before the initial set in the concrete had taken place.

The sloping sides were lined with 2 in. blue tiles and the openings with cast-iron throat plates. The landings for ladders were cantilevered in reinforced concrete from the side walls and beams.

Recent Developments in the Preparation of Coke.

Important developments in the utilization of coke for central heating and industrial purposes and domestic hot water supplies and heating have taken place during recent years. The desire to supply coke of the best quality to meet these demands has led to the considerations of improved quenching, handling, grading, and storage arrangements. The revenue from coke is still one of the most important factors to be considered in the economics of gas manufacture.

For some years the idea held that total gasification represented the acme of efficiency in gas-works practice and that somehow progress was to be sought in that direction. In the areas of many large undertakings in close proximity to each other the local market was doubtless rather restricted, and the surplus had to be exported at very low prices. A mental attitude developed, to the detriment of coke; it was considered a secondary product, and the quality, preparation, and after treatment received but scant attention.

Coals are more critically examined now from the two-fold aspect of gaseous therm content, coke yield, and quality. Several researches have been conducted at Leeds University under the auspices of the Joint Research Committee of The Institution of Gas Engineers and Leeds University with the object of studying the conditions of its production during carbonization, its characteristics, and the conditions favouring increased combustibility and reactivity. Studies on sizes of original coal charged, the effects of fine grinding, blending with other coals or with inorganic compounds as sodium carbonate, iron oxide, &c., have been conducted. Some of the beneficial results found are capable of translation into practice. Economic considerations rule out the practical applications of others, which, while slightly improving coke quality, do so only at the expense of a maximum yield of gaseous therms. What the reports, however, do confirm is this, that without sacrifice of gaseous therms the quality of coke is dependent on

(1) Using coals only of the lowest ash content.
(2) Proper quenching methods giving a low moisture content of coke, only the minimum of water being used, and
(3) Coke grading in sizes to suit the consumer. As a corollary to the latter the necessity of good sales organization, cultivation of the local market, supervision of its utilization, and assistance to the consumer to use it properly.

It is scarcely necessary to stress the importance of low ash content, the economic aspect of it is widely appreciated. With very wet coke fine breeze and dirt will cling to the pieces, increasing the ash content, as well as lowering the calorific value by the presence of moisture.

It is difficult to maintain combustion when only a small volume of fuel is present in the grate or firebox. This is further aggravated if the volume of coke consists of a few large lumps—there are fewer points of contact between larger pieces; for smaller grates and fireboxes the larger pieces are definitely unsuitable.

A word about nomenclature—coke has been graded in Cork into three sizes called large, medium, and nuts. It would be well if the sizing and nomenclature could be standardized. Another point is that coke screened through, say, a 2 in. circular hole in a plate screen is very much smaller than that passing through a 2 in. square mesh. The shape of the screening medium should be considered. The three sizes—2 in. and over, 2 in. to 1 in., and 1 in. to ½ in., seem to meet all the requirements of our customers.

Attention should be directed to the fixing of the screening plates or meshes in a manner permitting speedy replacement. As with constant renewals very much time might be lost in these operations. Vibratory screens are gaining favour and for screening the smaller grades have definite advantages, as the coke is given an impulse and more exact separation takes place. For debreezing at bunker outlets special small vibratory screens, either fixed or portable, are of advantage. Automatic weighers for sacks are often used in conjunction with these types of screen.

Sales Organization.

In Cork, attention is given to the matter of prompt deliveries of orders for coke. Domestic consumers are supplied direct, in addition to being supplied in the ordinary way through coal merchants and retailers. Supplies of suitable literature are carried by the lorry drivers—leaflets on the new coke fires, domestic coke boilers, heating of greenhouses, &c. In most of this literature prominence is given to the use of that very real labour saver, the gas

Fig. 2.—Reinforced Concrete Coke Hoppers at the Works of the Cork Gas Company.

poker. The lorries are attractively painted with appropriate slogans on the sides, such as "Coke for Efficiency and Economy," "Install a Domestic Coke Boiler," &c. "Coke Boilers" and advertising figures cut out of heavy plywood and attractively coloured, giving bold relief when fixed to the sides of the lorry, make an individual and striking display. Press and other methods of advertising are largely used. Special offers for sample deliveries are made from time to time. During a period when much local public building was in progress or in contemplation "Coke for Central Heating" was emphasized in an advertising campaign. In the same way, and at the appropriate time or season, coke was advertised for each of its special uses in turn.

In this Paper much attention has been directed to one aspect of modern development—the investigation of more permanent materials for gas-works structures and machinery, and the wider adoption of reinforced concrete construction for that purpose. It was stressed that particular care is necessary, if this form of construction is to prove truly permanent, without the necessity for extensive renewals and repairs. Reference is made to a case, in the appendix, where under stress of war conditions such care was not exercised, giving experiences of resulting deterioration and the extensive but very complete repairs which had to be undertaken. Reinforced concrete is a composite material—the concrete must itself resist disintegration and protect the embedded steel. Attention was therefore directed to indicating the qualities necessary in the design of good concrete for these requirements.

The Author is indebted to Mr. Joseph McNicholl, M.I.Chem.E., for permission to present this Paper.

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(1) "Aggregate Grading and Concrete Quality" (Prof. H. N. Walsh, M.E., D.I.C.). Transactions of the Institution of Civil Engineers of Ireland, Vol. LIX., pp. 275–338.

(2) "Aggregate Grading in Relation to Concrete Mix Design" (Prof. Walsh). Transactions of the Institution of Civil Engineers of Ireland, Vol. LXII., pp. 197–236.

(3) "Repairs to Reinforced Concrete—by Cement Gun Method" (G. C. Pearson, Birmingham Corporation Gas Department). Midland Association of Gas Engineers and Managers, October, 1933. (See "GAS JOURNAL," Vol., 204, p. 343).

Discussion.

The PRESIDENT said it was a long time since the Association had had a Paper of this character. They all knew the part that reinforced concrete had played in constructional work for many years, and Mr. Sheehan had splendidly upheld the reputation of the many engineers that Munster had produced. Those connected with the smaller gas-works owed the able administrators of the great Cork Gas Company a deep debt of gratitude. The Cork Company was certainly an example and an inspiration to the smaller gas undertakings in the country. Their showrooms, their publicity schemes, and many other enterprises, were always most helpful. Mr. M'Nicholl, Mr. Travers, Mr. Sheehan, and the Directors were at all times ready to assist others. Might there long be forthcoming engineers of the character and the calibre of Mr. Sheehan.

Mr. A. LAW (Limerick), after congratulating the Author, went on to say that he had had an opportunity of going over the Cork Gas-Works, and the Company were to be complimented upon the condition they were in. The Paper was typical of Mr. Sheehan, who was always ready to impart all the information he possessed. He was one of the younger generation, and the Association were fortunate to have him as a member.

Mr. L. G. YOUNG (Carlow) referred to one little point he had noticed in connection with reinforced concrete on a small gas-works. He had often seen on the top of the retort bench at the front, where the bricks went over the arch, they were inclined to crack. Some years ago he thought he would try reinforced concrete on the top of the arch, and though the retorts had been let down and lit up there had been no sign of any crack.

A Reinforced Concrete Age.

Mr. J. M'NICHOLL (Cork) said he did not propose to criticize the Paper in detail, but would confine his remarks to dealing with the subject in a general way. Mr. Sheehan had graduated in what, from an engineering point of view, might be termed the "Reinforced Concrete Age." Forty years ago comparatively little was known of this form of construction, but since then progress—not only in the scientific development of the subject, but also in its general acceptance by the public—had been very rapid, so that to-day in every city, and almost in every village, there were to be found examples of reinforced concrete construction. It had proved its utility, and until something better came along would continue to be extensively made use of. At the same time, he found there were some engineers who had a sort of obsession for reinforced concrete,

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and he had known cases of its use where mass concrete would have been just as good and much cheaper. Even in gas-works were to be found cases in which cast iron or steel would have been better, but where reinforced concrete had been used. One disadvantage with reinforced concrete was that, when they came to demolish a building—and they had to do this from time to time to erect new ones—they were faced with a terrible job. While in London recently he had looked at the work in progress on the site of the old Earl's Court Exhibition, and the quantity of reinforced concrete being used in these foundations was stupendous. He did not know how it would be removed, if it had to be removed, at some future date. Packed in the foundations there would be thousands of tons of steel. In the case of simple steel or iron structures, when demolished the material would have a certain value, but there would be no value attaching to reinforced concrete.

Mr. M'Nicholl, continuing, said that the first structure of any importance to be erected in ferro-concrete at the Cork Gas-Works was in 1923, when new workshops were erected, comprising a single storey machine shop with overhead travelling crane, with a two-storeyed building adjoining, comprising meter repairing and blacksmiths' shops on the ground floor and a commodious carpenters' shop on the first floor. The work—to plans and specification drawn up on the works—was entrusted to a local contractor, and he was pleased to say that, on the whole, a very good job was turned out. In the following year they put down a reinforced concrete floor to the retort house, and that also was entrusted to a contractor. But since 1924 all the building work, in addition to being planned on the works, had been done by the Company's own workmen—engaging a few extra men when necessary. Mr. Sheehan had had the designing of the work and the supervising during construction, and therefore in speaking on the subject he was on solid ground. Probably he would have preferred to confine his Paper to the purely engineering aspect of the work, and it was in order to give the members some other points to discuss that he had introduced notes on coke handling, grading, &c. Those in charge of small works had little time to devote to problems involving a close study of engineering, but all were interested in methods of carbonization, purification, treatment of residuals, and the like.

Mr. L. W. DALBY (Kilkenny) remarked that the subject of reinforced concrete was bound to interest all engineers. Kilkenny, with which he happened to be associated at the present time, was one of the first places in Ireland where reinforced concrete was put in use. A very fine bridge was erected about 1910. Now the surface was broken on the underside, and the reinforcing bars showed quite plainly. Mr. Sheehan spoke of purifiers, which he hardly thought suitable for construction in reinforced concrete. Of course, it had been used for purifiers. An early installation was at a gas-works on the outskirts of London, where they put down a large installation of reinforced concrete overhead purifiers. He had frequently seen them, and they must have been in use for nearly thirty years.

Mr. J. RICHMOND (Penicuik) remarked that before the Kilkenny bridge was built there was an example of reinforced concrete at the works with which he was connected, where a gasholder tank was put down about forty years ago, and reinforced by ordinary hoop iron.

Mr. Sheehan Replies.

Mr. SHEEHAN, in the course of his reply to the points that had been raised in the discussion, said that Mr. Law had been very kind in his remarks. His Company were always ready, up to the limit of their own knowledge and experience, to give all the help they could to others, and he was particularly indebted to Mr. M'Nicholl for having come up from Cork to support him at the meeting that day. He shared with Mr. M'Nicholl, so far as purifiers were concerned, his affection for cast iron. As to demolition of reinforced concrete work, he thought rock drills and oxy-coal gas would have a fine field in this connection. He realized, however, there would be no value in the steel, which would have to go to the scrap heap. Mr. Dalby had mentioned the bridge over the River Nore as a very early example of reinforced concrete construction, and it must have been one of the first of its kind in Ireland. In the course of the last year or two, a very fine reinforced concrete bridge had been erected at Kenmare, where it was subjected to much more severe conditions than a bridge over a fresh water river, but he was quite sure that, even with the salt spray beating on one side of the bridge, within the next thirty or forty years it would not show the signs of wear that the earlier example referred to by Mr. Dalby did. Because all proportions and grading were right, he was confident it would prove in truth a permanent structure. Mr. Richmond's account of a still earlier example of reinforced concrete construction was interesting. At first there was no definite method of computing the stresses to which the steel and concrete would be subjected, but the early examples had justified the faith of the engineers in what was at that time an untested idea.

The PRESIDENT said it might interest Mr. Sheehan to know that he (Mr. MacEvoy) was in the field with a very eminent engineer on reinforced concrete work many years ago, when they erected a ferro-concrete tower at Rosslare. He himself was not an expert in ferro-concrete, but the engineer responsible for the job was. The same engineer also, he thought, designed the bridge over the Nore, to which Mr. Dalby had referred. In Waterford there was another fine example of a bridge. Mr. Sheehan graduated at Cork University, which had produced some exceedingly fine men, and he was a credit to that University.

Mr. SHEEHAN remarked that the conditions in gas-works were exceptionally severe on steel—more so than on reinforced concrete, though they were severe on that too.

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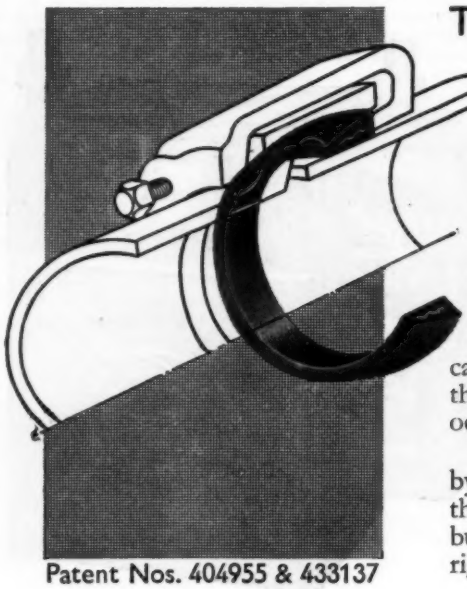

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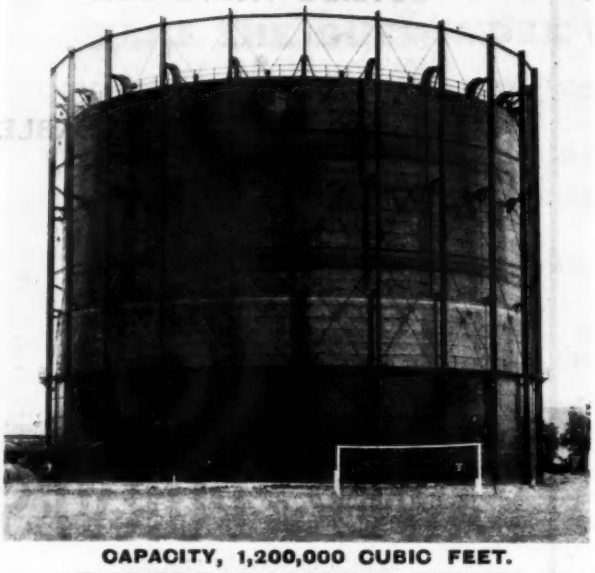

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Gas Markets and Manufactures

Stock Market Report

(For Stock and Share Lists, see later pages)

The new Account opened last week under promising conditions, and the volume of business was particularly heavy for this period in August. British Funds maintained their strength and a few recorded fractional improvements, while foreign bonds also hardened. Home Rails received a stimulus as a result of the men's acceptance of the wages award, though any appreciations in value were negatived by the latest somewhat disappointing traffic returns. Industrials on the whole made a good show, a feature being the heavy demand for tobacco shares and the principals closed at considerably higher levels. Business eased off towards the end of the week and some profit-taking brought about reactions here and there, though the general undertone remained firm.

The volume of business in Gas stocks and shares was heavier than during the preceding week, which is partly attributable to the fact that many ordinary and preference stocks became *ex* div. on Aug. 10, and as is often the case holders placed their stock on the market after taking the dividend. There were no special features, and, with the exception of the *ex* div. reductions, prices continued firm with very few changes. Alliance and Dublin registered a further gain, closing 1 point up at 166½; South Eastern Gas £1 ordinary shares improved 6d. to 27s. 6d.; and Croydon 5% debenture rose 2 points to 125½. In the Supplementary List, the only change took place in the United Kingdom ordinary and preference shares, both gaining 3d. to 21s. 9d. and 22s. respectively. It will also be noticed in this List that the Associated Gas and Water 3½% redeemable debenture stock has been given a nominal quotation of 99-102.

The Sheffield Gas Company is maintaining its interim dividend at 3%, the rate paid for the corresponding period since 1931. It will be remembered that this Company, which takes its supplies of gas in bulk from the South Yorkshire Gas Grid Company, Ltd., has made rapid progress during the past four years—the sales of gas increased by no less than 11% in 1935—so it is within the bounds of possibility that some addition to the current rate of distribution to the ordinary stockholders might be possible on the full year if the present rate of expansion continues. The price of the stock and the yield were given in this Report last week, though it is satisfactory to note that during the current week business has been recorded on the London Exchange at the same price as that ruling at Sheffield, where it has a large local popularity.

Current Sales of Gas Products

The London Market for Tar Products.

Aug. 17.

The prices of tar products remain as quoted on the 10th instant:

Pitch, nominal, at 35s. to 36s. per ton f.o.b.
Creosote, about 5½d. per gallon.
Refined tar, 3¾d.
Pure toluole, about 2s. 4d.; pure benzole, 1s. 7d. to 1s. 8d.; 95/160 solvent naphtha, about 1s. 7d.; and 90/160 pyridine, about 5s.—all per gallon naked at makers' works.

Tar Products in the Provinces.

Aug. 17.

The average prices of gas-works products during the week were: Gas-works tar, 19s. 3d. to 24s. 3d. Pitch—East Coast, 33s. to 35s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 33s. to 35s. 6d.* Toluole, naked, North, 1s. 10½d. to 1s. 11d. Coal-tar crude naphtha, in bulk, North, 8d. to 8½d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 4½d. Heavy naphtha, North, 1s. 1½d. to 1s. 2½d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¾d. to 5d.; low gravity, 4½d. to 4¾d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 2s. 4d. to 2s. 6d. Naphthalene, £21 to £23. Salts, 95s. to 100s., bags included. Anthracene "A" quality, 3d. to 3½d. per minimum 40%, purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Aug.* 15.

While prices continue steady, and, in some cases, are inclined to rise, there is not a great deal of activity, caused more by want of supplies than from any lack of demand.

Crude gas-works tar.—The actual value is 34s. to 35s. per ton *ex* works in bulk.

Pitch.—There is little business offering and prices are nominal at 32s. 6d. to 35s. per ton f.o.b. Glasgow for export, and 32s. 6d. per ton *ex* works in bulk for home trade.

Refined tar.—Quite fair quantities continue to leave the works despite weather conditions and quotations are unchanged at 3d. to 3¼d. per gallon f.o.r. for export and 3¾d. to 4d. per gallon *ex* works in buyers' packages for home trade.

Creosote oil.—This market is inclined to be dull, but quotations are meantime maintained as under: Specification oil, 4¾d. to 5d. per gallon; low gravity, 5d. to 5¼d. per gallon; neutral oil, 4¾d. to 5d. per gallon; all *ex* works in bulk.

Cresylic acid.—The number of enquiries exceeds the supply, and, in fact, makers have practically nothing for disposal over the next few months. The following prices can only be taken as nominal: Pale, 97/99%, 2s. 3d. to 2s. 5d. per gallon; dark, 97/99%, 2s. to 2s. 2d. per gallon; pale, 99/100%, 2s. 9d. to 3s. per gallon; all *ex* works in buyers' packages.

Crude naphtha.—Production is not great and value is steady at 5½d. to 6d. per gallon *ex* works in bulk, according to quality and district.

Solvent naphtha.—Values are, if anything, a little easier with 90/160 quality at 1s. 5d. to 1s. 6d. per gallon and 90/190 heavy naphtha at 1s. to 1s. 1d. per gallon.

Motor benzole is quietly steady at 1s. 3½d. to 1s. 4d. per gallon.

Pyridines.—90/160 grade is 4s. 6d. to 5s. per gallon, and 90/140 grade, 5s. to 5s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s. d.		s. d.	
Crude benzole . . .	0 8½	to	0 9	per gallon at works
Motor ,, . . .	1 2	,,	1 2½	,, ,, ,,
90% ,, . . .	1 3	,,	1 3½	,, ,, ,,
Pure ,, . . .	1 7	,,	1 7½	,, ,, ,,

Contracts Advertised To-Day

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Spenborough Gas Department. [p. 448.]

Trade Notes

British Licence for Rateau Specialities.

The Bryan Donkin Co., Ltd., of Chesterfield, announce that they have now completed arrangements with the Rateau Company, of Paris, and have obtained from them the sole and exclusive licence to manufacture and sell their Rateau specialities in this country and the British Empire. They have also taken over the Rateau London Office staff, so that all communications should in future be addressed to Chesterfield. Included in the large range of Rateau products are centrifugal pumps, single or multi-stage, for all purposes, also fans, boosters, compressors, &c.

Gas Undertakings' Results

Atherton.

The Atherton (Lancs.) Council Gas Department's annual report shows that during the year the Department made a gross profit of £1,373, but after deducting interest and sinking fund charges the net profit was £295. The income of the Department for the year showed an increase of £503 over the previous year, but total expenditure also increased by £1,072. Gas showroom charges increased by £1,149, largely due to cost of alterations to Market Street premises. Without extraordinary items of expenditure the profit would have been £1,522. The quantity of gas produced during the year was 83,270,800 cu.ft., an increase of 3,138,000 cu.ft.; total quantity of gas sold was 79,515,519 cu.ft., an increase of 2,492,475 cu.ft.

Malton (United Kingdom Gas Corporation).

The Directors' report for the half-year ended June 30, 1936, to the proprietors of the Malton Gas Company states that the balance of profit is £1,923 compared with £1,766 twelve months ago. The consumption of gas has increased during the half-year over the corresponding period by 4,795 therms or 2·8%. This increase is reflected in the receipts for gas, which are £174 more. During the period under review an offer to purchase the shares of the Company was received from the United Kingdom Gas Corporation, Ltd. This offer was accepted by the shareholders to the extent of 95% of the share capital. In accordance with the terms of the agreement with the Corporation Messrs. Henry King, George Henry Stephenson, and John Edwin Eastwood have resigned, and Messrs. W. M. Carr, Michael Hubert Tetley, and Thomas Law have been appointed Directors to fill the vacancies. The statement of accounts shows, after paying income-tax, a disposal balance of £7,787. The Directors recommend the payment of a dividend of 6⅜%, free of tax, for the half-year, which will absorb £1,530 and leave the sum of £6,207 to be carried to the next accounts.

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Official Quotations on the London Stock Exchange

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Aug. 14.	Rise or Fall on Week	Transactions, Lowest and Highest Prices During the Week.
1,767,439	Stk.	Mar. 16	7	7⅛	Alliance & Dublin Ord. ...	164—169	+1	166—168½
374,000	„	June 22	4	4	Do. 4 p.c. Deb. ...	94—99	...	...
557,655	„	Aug. 10	7	7	Barnet Ord. 7 p.c.	167—172*	−2	...
300,000	1	Mar. 30	1/4⅛	1/9⅛	Bombay, Ltd.	1½—1¾	...	...
179,305	Stk.	Aug. 10	9½	9½	Bournemouth sliding scale ...	217—227*	−3	...
590,407	„	„	7	7	Do. 7 p.c. max. ...	168—173*	−2	170
493,960	„	„	6	6	Do. 6 p.c. Pref. ...	146—151*	−2	...
50,000	„	June 22	3	3	Do. 3 p.c. Deb. ...	84—89	...	...
262,025	„	„	4	4	Do. 4 p.c. Deb. ...	105—110	...	...
335,000	„	„	5	5	Do. 5 p.c. Deb. ...	123—128	...	...
357,900	„	Aug. 10	7½	7½	Brighton, &c., 6 p.c. Con. ...	168—173*	−2	...
649,955	„	„	6½	6½	Do. 5 p.c. Con. ...	153—158*	−2	...
205,500	„	„	6	6	Do. 6 p.c. 'B' Pref.	142—147*	−2	...
855,000	„	Mar. 2	7	8	British Ord.	158—163	...	160½—161
100,000	„	June 8	7	7	Do. 7 p.c. Pref.	151—156	...	...
350,000	„	„	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	108—113	...	...
120,000	„	„	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...	99—99⅛
450,000	„	„	5	5	Do. 5 p.c. Red. Deb. ...	110—115	...	...
200,000	„	„	3½	3½	Do. 3½ p.c. Red. Deb. ...	97—99	...	98
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1—3	...	...
100,000	10	6 Nov. '33	4½	4½	Do. 4½ p.c. Pref. ...	1—3	...	...
150,000	Stk.	June 22	4½	4½	Do. 4½ p.c. Deb. ...	80—85	...	...
626,860	„	July 20	6	6	Cardiff Con. Ord.	128—133	...	...
237,860	„	June 8	5	5	Do. 5 p.c. Red. Deb.	108—113	...	...
98,936	1	Apl. 20	2/-	2/-	Colombo, Ltd., Ord.... ...	1⅜—1¼	...	...
24,500	1	„	1/4½	1/4½	Do. 7 p.c. Pref....	20/—22/-	...	...
609,204	1	Mar. 30	-/11·48	-/11·48	Colonial Gas Assn. Ltd. Ord.	18/—20/-	...	...
296,053	1	„	1/3·30	1/3·30	Do. 8 p.c. Pref	22/—24/-	...	...
1,775,005	Stk.	Aug. 10	5	5	Commercial Ord.	95—100*	−2	97½
620,000	„	June 8	3	3	Do. 3 p.c. Deb. ...	84—89	...	86½—87¼
286,314	„	Aug. 10	5	5	Do. 5 p.c. Deb. ...	118—123*	−2	...
807,560	„	Aug. 10	7	7	Croydon sliding scale ...	157—162*	−3	160
644,590	„	„	5	5	Do. max. div.	113—118*	−2	117
620,385	„	June 22	5	5	Do. 5 p.c. Deb.... ...	123—128	+2	125—127
239,000	„	Aug. 10	5	5	East Hull Ord. 5 p.c.... ...	107—110*	...	...
184,555	„	Aug. 10	6	6	East Surrey Ord. 5 p.c. ...	128—133*	−2	...
176,211	„	June 8	5	5	Do. 5 p.c. Deb. ...	120—125	...	...
19,284,128	„	Aug. 10	5⅜	5⅜	Gas Light & Coke 4 p.c. Ord.	27/3—28/3a*	−/3	27/9—28/4½
2,600,000	„	„	3⅜	3⅜	Do. 3½ p.c. max.... ...	89—92*	−1	90—91½
4,477,106	„	„	4	4	Do. 4 p.c. Con. Pref. ...	104—108*	−1	106½—106¾
8,602,497	„	May 18	3	3	Do. 3 p.c. Con. Deb. ...	87—90	...	89—90
3,642,770	„	„	5	5	Do. 5 p.c. Red. Deb. ...	116—119	...	119½
3,500,000	„	„	4½	4½	Do. 4½ p.c. Red. Deb. ...	114—117	...	116½
700,000	„	...	...	...	Do. 3½ p.c. Red. Deb. ...	103—105	+½	105
270,466	„	Feb. 17	6	6	Harrogate New Cons. ...	1⅜—1⅞	...	...
157,500	1	Mar. 16	1/7½	1/7½	Hongkong & China, Ltd. ...	133—138*	−2	...
213,200	Stk.	Aug. 10	6	6	Hornsey Con. 3½ p.c. ...	152—157	−2½	153½—156
5,600,000	„	May 18	8	12	Imperial Continental Cap. ...	91—96	...	...
223,130	„	July 20	3½	3½	Do. 3½ p.c. Red. Debs.	175—180	...	...
285,242	„	Feb. 17	8½	8½	Lea Bridge 5 p.c. Ord. ...	180—190	...	...
165,736	„	Mar. 16	8	10	Maidstone 5 p.c. Cap. ...	80—85	...	...
63,480	„	June 22	3	3	Do. 3 p.c. Deb. ...	195—205	...	...
75,000	„	May 18	†10	†10	Malta & Mediterranean ... Metropolitan (of Melbourne)			
392,000	—	Apl. 1	5½	5½	5½ p.c. Red. Deb.	102—107	...	...
231,978	Stk.	Feb. 17	5	5	M.S. Utility 'C' Cons. ...	110—115	...	...
818,657	„	„	4	4	Do. 4 p.c. Cons. Pref.	103—108	...	106½
360,075	„	June 22	4	4	Do. 4 p.c. Deb. ...	103—108	...	...
148,955	„	„	5	†5	Do. 5 p.c. Deb. ...	122—127	...	...
125,000	—	July 1	3½	3½	Do. 3½ p.c. Rd. Rg. Bds.	97—100	...	...
675,000	Stk.	June 22	†3	†6	Montevideo, Ltd.	68—73	...	70
225,000	„	Aug. 10	7½	7½	North Middlesex 6 p.c. Con.	170—175*	−2	175—175½
396,160	„	Aug. 10	5	5	Northampton 5 p.c. max. ...	110—115*	...	...
300,000	„	Apl. 20	†9	†7	Oriental, Ltd....	165—170	...	...
416,617	„	June 8	8	8	Plymouth & Stonehouse 5 p.c.	168—173	...	...
504,416	„	Aug. 10	8½	8½	Portsmouth & Gosport Cons.	170—175*	...	...
241,446	„	„	5	5	Do. 5 p.c. max. ...	110—115*	...	...
73,350	„	„	...	5	Do. 5 p.c. Pref. ...	118—123*	...	...
114,000	„	July 20	5	5	Preston 5 p.c. Pref.	110—115	...	...
355,698	1	Apl. 20	1/-	1/-	Severn Val. Gas Cor. Ld. Ord.	21/—23/-	...	21/9—22/3
454,510	1	Mar. 16	-/10½	-/10½	„ „ 4½ p.c. Cum. Pref.	21/—23/-	...	...
133,201	Stk.	Feb. 17	8½	5	Shrewsbury 5 p.c. Ord. ...	147—152	...	...
90,000	10	June 8	†3½	†4	South African....	4—5	...	...
1,106,173	1	May 4	1/2½	1/2⅜	South East'n Gas Cn. Ld. Ord.	26/6—28/6	+/6	27/9—28/3
845,511	1	Mar. 16	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pref.	21/—23/-	...	23/-
200,000	1	„	4	4	Do. 4 p.c. Cum. Pref. ...	20/9—21/9	...	...
450,000	Stk.	Aug. 10	4	4	Do. 4 p.c. Red. Deb. ...	100—103*	−1	...
6,709,895	„	Aug. 10	6½	5	South Met. Ord.	124—127*	−1	124—126
1,135,812	„	„	6	6	Do. 6 p.c. Irred. Pf....	145—150*	...	147—148½
850,000	„	„	4	4	Do. 4 p.c. Irred. Pf....	103—106*	−1	...
1,895,445	„	June 22	3	3	Do. 3 p.c. Deb. ...	87—90	...	89—89½
1,000,000	„	July 6	5	5	Do. 5 p.c. Red. Deb. ...	113—116	...	...
1,543,795	„	Aug. 10	6	6	South Suburban Ord. 5 p.c....	129—134*	−2	133
512,825	„	„	5	5	Do. 5 p.c. Pref....	120—125*	−2	...
500,000	„	„	4	4	Do. 4 p.c. Pref....	102—107*	−1	...
898,587	„	June 8	5	5	Do. 5 p.c. Deb....	121—126	...	...
250,000	„	„	4	4	Do. 4 p.c. Deb....	102—107	...	...
427,859	1	May 4	9⅜	1·2⅜	S. Western Gas & Water Ord.	21 6—23/6	...	...
160,523	1	Apl. 20	...	-/10⅜	Do. 4½% Red. Cum. Pref.	21 —23/-	...	...
110,000	Stk.	June 22	4	4	Do. 4% Red. Deb. ...	100—105	...	...
647,740	„	Aug. 10	5	5	Southampt'n Ord. 5 p.c. max.	111—116*	−4	...
121,275	„	June 8	4	4	Do. 4 p.c. Deb.	100—105	...	...
350,000	„	Aug. 10	5½	5½	Swansea 5½ p.c. Red. Pref. ...	109—114*	−2	113
106,000	„	June 8	6½	6½	Do. 6½ p.c. Red. Deb. ...	98—101	...	...
94,000	„	„	...	...	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
1,076,490	„	Aug. 10	6⅜	6⅜	Tottenham and District Ord.	148—153*	−2	150½—151
409,835	„	„	5½	5½	Do. 5½ p.c. Pref. ...	128—133*	−2	131½
62,235	„	„	5	5	Do. 5 p.c. Pref. ...	120—125*	−2	...
371,850	„	June 8	4	4	Do. 4 p.c. Deb. ...	102—107	...	...
369,774	„	Aug. 10	7	7	Uxbridge, &c., 5 p.c. ...	152—157*	−2	155
108,330	„	„	5	5	Do. 5 p.c. Pref. ...	120—125*	−2	...
1,340,521	„	Aug. 10	7	7	Wandsworth Consolidated ...	157—162*	−2	161
1,371,373	„	„	5	5	Do. 5 p.c. Pref. ...	121—126*	−1	...
500,000	„	„	...	...	Do. 4 p.c. Pref. ...	104½—106½*	...	105½—106
1,317,964	„	June 8	5	5	Do. 5 p.c. Deb. ...	122—127	−1	...
338,300	„	„	4	4	Do. 4 p.c. Deb. ...	103—108	...	105½
499,735	„	Aug. 10	7½	7	Watford and St. Albans Ord.	153—158	−2	...
200,000	„	„	5	5	Do. 5 p.c. Pref. ...	120—125	...	...
200,000	„	„	5½	5½	Do. 5½ p.c. Pref. ...	131—136*	−2	...
200,000	„	June 22	4	4	Do. 4 p.c. Red. Deb.	100—105	...	...
100,000	„	„	...	3½	Do. 3½ p.c. Red. Deb.	99—102	...	...
158,400	„	Mar. 2	5	66	Winchester W. & G. 5 p.c. Con.	122—127	...	...

a.—The quotation is per £1 of Stock. b.—Paid £3, including 10s. on account of back dividends. * Ex div.
† Paid free of income-tax. ‡ For year.

Stock and Share List continued overleaf.

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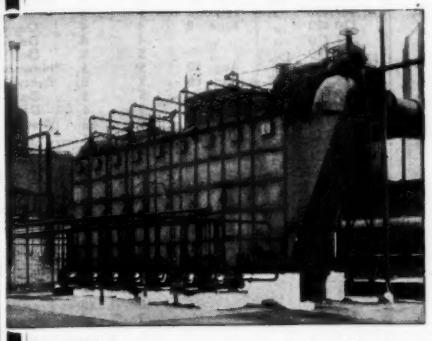
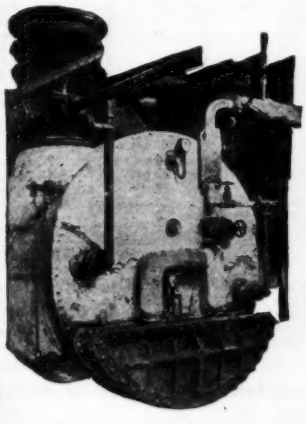


"Permac" joints in an important London Gas Works.



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STOCK AND SHARE LIST—Cont.

Stocks Officially Quoted on Provincial Exchanges

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Aug. 14	Rise or Fall on Week.	Transactions, Lowest and Highest During the Week.
BRISTOL EXCHANGE.								
347,756	Stk.	July 20	6	5	Bath Cons.	122½—124½*	...	...
1,667,250	,,	July 6	5	5	Bristol, 5 p.c. max. ...	120—122	−½	...
120,420	,,	June 8	4	4	Do. 1st 4 p.c. Deb. ...	101½—103½	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	101½—103½	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	124—127	...	...
274,000	,,	Aug. 10	5	5	Newport (Mon.) 5 p.c. max....	110—114*	−1½	...
13,200	12	Mar. 16	7	8½	Pontyp'l Gas & W. 10 p.c. 'A.'	14—15	...	...
13,600	10	,,	5	6	Do. 7 p.c. 'B.'	11½—12½	...	...
40,000	10	,,	5	6	Do. 7 p.c. 'C.'	11½—12½	...	...
140,778	Stk.	Aug. 10	5	5	Weston-super-Mare Cons. ...	111—113*	−2	...
64,338	,,	June 22	4	4	Do. 4 p.c. Deb.	96½—98½	...	...
33,340	,,	,,	7½	7½	Do. 7½ p.c. Deb.	163—166	...	...
LIVERPOOL EXCHANGE.								
157,150	Stk.	Aug 10	6½	5	Chester 5 p.c. Ord.	109—114	...	...
92,500	,,	June 8	4	4	Do. 4 p.c. Pref.	98—102	...	...
32,540	,,	,,	3½	3½	Do. 3½ p.c. Deb. ...	90—95	...	...
41,890	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	99—103	...	...
2,167,410	,,	Feb. 17	6	6	Liverpool 5 p.c. Ord. ...	135—137	...	...
245,500	,,	June 22	5	5	Do. 5 p.c. Red. Pref ...	103—108	...	...
306,083	,,	July 6	4	4	Do. 4 p.c. Deb. ...	104—106	...	...
106,280	,,	July 20	10	10	Preston 'A' 10 p.c. ...	198—208	...	...
188,219	,,	,,	7	7	Do. 'B' 7 p.c.	137—147	...	...
NEWCASTLE EXCHANGE.								
122,577	Stk.	Aug. 10	8	8	Blyth 5 p.c. Ord.	151—153*	−3	...
732,000	,,	Feb. 3	5	5	Hartlepool G. & W. Cn. & New	120—122	...	...
2,061,315	,,	Aug. 10	5½	5	Newcastle & Gateshead Con.	26 6—27 -a*	−/6	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	105—106*	...	...
776,706	,,	June 22	3½	3½	Do. 3½ p.c. Deb. ...	99—101	...	...
277,285	,,	May 4	5	5	Do. 5 p.c. Deb. '43...	103—104	...	...
209,820	,,	Aug. 10	8½	8½	South Shields Con.	171—173*	−3	...
299,542	,,	Aug. 10	6	6	Sunderland 6 p.c. max. ...	127—129*	−2	...
NOTTINGHAM EXCHANGE.								
542,270	Stk.	Aug. 10	10	7	Derby Con.	174—184*	−2	...
55,000	,,	June 22	4	4	Do. 4 p.c. Deb.	100—105	...	...
84,750	,,	Feb. 17	5	12	Long Eaton 'A' Ord. ...	...	...	...
50,000	,,	,,	4	10	Do. 'B' Ord. ...	...	...	...
20,000	10	June 8	5	5	Do. 5 p.c. Pref. ...	10—12	...	...
80,000	Stk.	,,	5	5	Do. 5 p.c. Deb. ...	117—122	...	...
SHEFFIELD EXCHANGE.								
10,080	Stk.	Feb. 17	10	10	Great Grimsby 'A' Ord. ...	220—230	...	...
6,500	,,	,,	10	10	Do. 'B' Ord. ...	220—230	...	...
79,008	,,	,,	10	10	Do. 'C' Ord. ...	205—215	...	...
1,806,339	,,	Feb. 17	6	6	Sheffield Cons.	146—148	...	...
95,000	,,	July 6	4	4	Do. 4 p.c. Deb.... ...	99—101	...	...

a The quotation is per £1 of Stock.

Supplementary List of Stocks and Shares not Officially Quoted

202,152	Stk.	...	...	...	Ascot Ord.	119—124	...	...
128,182	,,	July 6	...	5	Do. 5 p.c. Pref.	115—120	...	...
238,631	1	June 8	5	5	Asd. Gas and Water Ord....	21/—23 -	...	22/1½—22/7½
323,681	1	,,	4½	4½	Do. 4½ p.c. Cum. Pref. ...	21/6—23/6	...	22/4½
150,000	Stk.	...	...	...	Do. 3½ p.c. Red. Deb. ...	99—102	...	...
17,000	,,	Feb. 17	8	8	Bognor Orig. Ord. 'A' ...	175—185	...	...
62,210	,,	,,	8	8	Do. New Addl. 'A' ...	175—185	...	...
87,160	,,	,,	7	7	Do. New 7 p.c. max. ...	145—150	...	...
37,440	,,	Aug. 10	10	10	Cam.Univ. & Town 10 p.c.max.	205—215*	−5	...
125,970	,,	,,	7	7	Do. 7 p.c. max.	155—160*	−3	...
39,025	,,	,,	5	5	Do. 5 p.c. max.	108—113*	...	...
65,000	,,	Aug. 10	8½	7½	Eastbourne 'A' 5 p.c. ...	168—173*	−2	...
198,000	,,	,,	7	6	Do. 'B' 3½ p.c.	140—145*	−2	...
112,312	,,	,,	5	5	Do. 5 p.c. Pref.	118—123*	−2	122
130,000	,,	June 22	5	5	Do. 5 p.c. Deb.	124—129	...	...
250,000	1	June 22	4	6	Gas Consolidation Ord. ...	20/—22/-	...	21/-
250,000	1	May 18	4	4	Do. 4 p.c. Red. Cum. Pref.	19/—20/	...	19/6—19/9
24,000	30	Aug. 10	8½	8½	Great Yarmouth 8½ p.c. max.	51—56*	−1	...
59,400	30	,,	7½	7½	Do. 7½ p.c. max.... ...	42—45*	...	...
51,160	Stk.	June 8	5½	5½	Do. 5½ p.c. Deb.... ...	123—128	...	...
152,600	,,	Mar. 2	8	8	Guildford Cons.	185—195	...	...
54,055	,,	,,	5	5	Do. 5 p.c. Pref.	114—119	...	...
68,250	,,	June 8	5	5	Do. 5 p.c. Deb.	120—125	...	113½
156,600	,,	Feb. 3	7½	7½	Hampton Court Cons. ...	173—178	...	...
81,660	10	Feb 4,'35	5	9	Leatherhead Ord.	16—17	...	...
107,960	10	Mar. 16	4	5½	Mid Kent Ord.	10—11	...	...
230,940	Stk.	Aug. 10	10	10	Oxford & District Ord. ...	205—215*	−5	...
47,112	,,	,,	5	5	Do. 5 p.c. Pref.	118—123*	...	...
50,000	,,	,,	6	6	Do. 6 p.c. Red. Pre ...	113—118*	...	...
126,193	,,	May 18	7½	7½	Peterborough Ord.	160—170	...	...
64,990	,,	Mar. 16	6½	7½	Redditch Ord.	135—140	...	...
166,850	,,	Aug. 10	9	8	Romford Ord.	168—178*	−2	...
60,000	,,	,,	4	4	Do. 4 p.c. Pref.	97—100*	...	...
44,000	,,	Mar. 16	5	5	Do. 5 p.c. Deb.	122—127	...	...
10,950	,,	Mar. 2	8	8	Ryde Ord.	165—170	...	...
136,191	,,	Aug. 10	7	5	Scarborough Ord.	126—136*	−2	...
27,825	,,	Feb. 3	8	8	Shanklin & Ventnor Cons. ...	152—162	...	...
40,643	,,	Mar. 2	7	7	Slough Ord.	147—152	...	...
221,000	,,	June 22	5	5	Do. 5 p.c. Deb.	116—121	...	...
28,872	1	May 4	5½	5½	S. Midland Gas Cpn.Ltd. Ord.	20/—22 -	...	...
28,866	1	Mar. 16	4½	4½	Do. 4½ p.c. Red. Cum Pref.	20/—22/-	...	...
137,730	Stk.	Aug. 10	7	7	Southgate & Dist. 7 p.c. max.	151—156*	−2	...
62,500	,,	,,	5	5	Do. 5 p.c. Pref.	115—120*	...	...
117,228	,,	Aug. 10	6	5	Swindon Cons.	110—115*	−1	...
60,425	,,	June 22	5	5	Do. 5 p.c. Deb.	120—125	...	...
64,380	,,	June 8	5	5	Torquay and Paignton 5 p.c. Pf.	117—122	...	...
50,000	1	Mar. 30	...	5·52d.	*a* Utd. Kingdom Gas Cpn. Ord.	21/3—22/3	+-/3	21/9—22/-
760,910	1	,,	2½	2½	Do. 4½ p.c. Prefd. Ord....	20/—22/-	...	...
110,910	1	May 18	2½	4½	Do. 4½ p.c. Cum. Pref. ...	21 6—22 6	+-/3	22/1½—22/6
900,000	Stk.	Mar. 16	...	3½	Do. 3½ p.c. Red. Deb. ...	98—101	...	...
130,000	,,	Aug. 10	8	5	Wakefield Ord.	140—145*	...	140
81,650	,,	,,	5	5	Do. 5 p.c. max.	105—110*	...	105
82,000	,,	July 20	6	6	Weymouth Ord.	105—110*	...	...
98,384	,,	Aug. 10	6	6	Wolverhampton 6 p.c. Pref.	127—132*	...	...
160,000	,,	June 8	5½	5½	Do. 5½ p.c. Rd. Db	107—112	...	...
370,000	,,	July 20	6	4	York Cons.	105—110	...	...
90,000	,,	June 22	5	5	Do. 5 p.c. Red. Deb. ...	103—108	...	...
133,640	,,	July 20	6½	6½	Yorktown (Cam.) 5 p.c. Cons.	130—135	...	...
120,000	,,	,,	5	5	De. 5 p.c. Pref.	118—123	...	...
35,000	,,	June 22	5½	5½	Do. 5½ p.c. Deb.... ...	130—135	...	...

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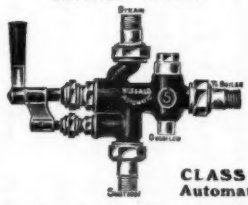

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